Towards the Sustainable Management of Electronic Waste in Nigeria: South Africa as a Model

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DECLARATION

I declare that the thesis for the degree of Doctor of Philosophy at the University of Cape Town hereby submitted, has not been previously submitted for a degree at this or any other university, that it is my work in design and execution, and that all the materials contained herein have been duly acknowledged.

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Irekpitan Okukpon Date

ABSTRACT

The trade in and management of electronic waste in Nigeria is significant because of the volumes of e-waste generated from second-hand electrical and electronic equipment (EEE) imports. Current and future e-waste discourse advocate the need for, not only an effective legislative approach, but also a sustainable approach towards e-waste management, best encapsulated through a concept known as the 'Extended Producer Responsibility (EPR)' approach. The EPR approach, which is based on the Polluter Pays Principle (PPP) places legal, financial, informative and physical (including environmental) responsibility on producers of EEE, from 'cradle-to-cradle.' The thesis groups this classification into a general term – the 'EPR Matrix,' which is utilised throughout the thesis to analyse the realistic implementation and enforcement of these responsibilities on a producer in a developing country context. Although the shipment of e-wastes between developed and developing countries is regulated under the Basel Convention 1989 and the Bamako Convention 1991, both treaties, however, do not prohibit it. The efforts of Conference of Parties (CoP) to both Conventions reveal a cognizant change in perception which is aligned with the ideals of the EPR approach to e-waste management. The realistic implementation of this approach in a developing country context is investigated, because the importer, rather than the producer is the key actor in the EEE chain. The identification of this circumstance requires that the EPR approach be extended to include the importer and other actors in the EEE chain, sharing applicable responsibilities proposed by the EPR Matrix.

The thesis explores the legitimacy of this premise, by evaluating the relative success of mandatory and voluntary EPR schemes on e-waste in South Africa. Although empirical investigation reflected in the thesis reveals that voluntary industry approaches on e-waste are effective and complementary to the regulatory model, this thesis also identifies a three-tier voluntary model for effective e-waste management in South Africa, and the scope of its application. Current e-waste legislation in Nigeria reflects the adoption of the EPR approach, but in essence, the provisions are ineffective, with the absence of requisite institutions to implement its provisions. This thesis suggest that Nigerian e-waste legislation be reconsidered, with a formalization of informal e-waste markets to reflect a more resolute approach towards illegal e-waste imports and management. The certainty of a successful, and effective EPR approach

in Nigeria requires a synergy of both voluntary and mandatory approaches to e-waste in that jurisdiction, and an extension of the EPR concept to include other stakeholders in industry – producers, importers, retailers, consumers and government. This thesis thus recommends the adoption of both voluntary and mandatory approaches to e-waste management in Nigeria, including an institutionalized approach, which requires the establishment of collection centres for e-waste recycling, the establishment of an EEE registry/database and proper regulation of the informal sector.

DEDICATION

To my parents, Barrister Alfred Okukpon and Professor (Mrs) Lucy Okukpon, for their unwavering love and support

and

To my darling son, Oluwatimilehin Efeose Adesanya

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ABBREVIATIONS

ARF	Advanced Recycling Fee
ADF	Advance Deposit Fee
ACP	African, Caribbean and Pacific
BAN	Basel Action Network
CAPDAN	Computer & Allied Products Dealers Association of Nigeria
COP	Conference of Parties
CPR	Collective Producer Responsibility
CPU	Computer Processing Unit
CRT	Cathode Ray Tube
DEA	Department of Environmental Affairs
DTI	Department of Trade and Industry
EAR	Environmental Audit Report
EAP	Environmental Assessment Practitioner
EC	European Community
ECA	Environment Conservation Act
EES	Electrical/Electronic Sector
EIA	Environmental Impact Assessment
EMF	Electro-magnetic Fields
EMP	Environmental Management Plan
EOL	End of Life
EPR	Extended Producer Responsibility
ESM	Environmentally Sound Management
EU	European Union
eWASA	e-Waste Association of South Africa
FEPA	Federal Environmental Protection Agency
GD	Guidance Document

ICT	Information Communication Technology
IIWMP	Integrated Industry Waste Tyre Management Plan
INECE	International Network for Environmental Compliance and Enforcement
IPR	Individual Producer Responsibility
IP & WM	Integrated Pollution & Waste Management
ISO	International Standards Organisation
ITA-PEG	Information Technology Association – Producer Environmental Group
IWMP	Integrated Waste Management Plan
LASEPA	Lagos State Environmental Protection Agency
LAWMA	Lagos State Waste Management Authority
LCA	Life Cycle Assessment
LDC	Least Developing Countries
MSC	Maintenance System Consultancy
NARAP	National Association of Refrigeration and Air Conditioning Practitioners
NCS	Nigerian Customs Service
NEAS	National Environmental Authorisation System
NEMA	National Environmental Management Act
NESREA	National Environmental Standards and Regulations Enforcement Agency
NETAN	National Electronics Technician Association of Nigeria
NGO	Non-governmental Organisations
NICIS	Nigeria Integrated Customs Information System
NIMBY	Not In My Backyard
NORA-SA	National Oil Recycling Association of South Africa
NPE	National Policy on the Environment
NVMP	Nedarlandse Verwijdering Metalektro Producten
NWMS	National Waste Management Strategy
NWMSI	National Waste Management Strategy Implementation

OECD	Organisation of Economic Co-operation and Development
PACE	Partnership for Action on Computing Equipment
PB	Polychlorinated Biphenyls
PBDE	Polybrominated Diphenyl Ethers
PCB	Printed Circuit Boards
PIC	Prior Informed Consent
PPE	Personal Protective Equipment
PPP	Polluter Pays Principle
PRO	Producer Responsibility Organisation
PS	Product Stewardship
PSP	Product Stewardship Programme
PWB	Printed Wire Boards
REDISA	Recycling Development Initiative of South Africa
RMI	Retail Motor Industry
RoHS	Restriction on Hazardous Substances
ROSE	Recycling Oil Saves the Environment
SAEWA	South African E-Waste Alliance
SAICM	Strategic Approach to International Chemicals Management
SAICRA	South African Industrial Container Reconditioners Association
SATRP	South African Tyre Recycling Process Company
SAWIS	South African Waste Information System
SCB	Secretariat of the Basel Convention
SESN	Seaport Environmental Security Network
SHEEE	Second-Hand Electrical and Electronic Equipment
SMD	Surface Mount Device
SSS	State Security Services
TCIPC	Tin Can Island Port Complex
TG	Technical Guidelines
TWG	Technical Working Group

UEEE	Used Electrical and Electronic Equipment
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UN	United Nations
VCR	Video Cassette Recorder
WCED	World Commission on Environment and Development
WEEE	Waste Electrical and Electronic Equipment

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CHAPTER ONE
INTRODUCTION AND BACKGROUND TO E-WASTE

Background to the Study

Generally, the management of waste presents a problematic dilemma, and the management of electronic waste in particular is even more so. The global growth in the production and consumption of electrical and electronic equipment (EEE) production and consumption has been exponential in the past two decades. This has been fuelled by rapid changes in equipment features and capabilities, product obsolescence, a decrease in prices and increased internet use.[1] In particular, product obsolescence is exacerbated by the rapid progress and pace of innovation of consumer products in the global electronics industry.[2] Significant international transboundary movement has involved used and end-of-life (EOL) EEE such as personal computers and accessories, computer hardware, compact disc (CD) players, TVs, fluorescent tubes, used mobile phones, etc. being transported from developed to developing countries.[3] A key reason for this trade is the existence of huge markets in developing countries and least developing countries (LDCs) for the removal of usable parts of EEE for repairs, refurbishment and re-use, and also for processing to recover raw materials.[4] Another reason is the economics of disposal of such EOL EEE in developed countries. Developed countries seeking to avoid labour costs, other additional costs imposed by safety requirements and the high cost of recycling such EOL electronic goods, ship such goods to developing countries and LDCs for disposal,[5] under the

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[1] International Conference on Chemicals Management 'Background information in relation to the emerging policy issue of electronic waste' Geneva, 11-15 May 2009 at 2, available at *http:/www.saicm.org/documents/iccm/ICCM2/meetingdocuments/ICCM2INF336ewastebackground.pdf*, accessed on 14 April 2010.

[2] Catherine Alexander and Joshua Reno (eds) *Economies of Recycling – The Global Transformation of Materials, Values and Social Relations* (2012) 98.

[3] ICCM paper, above (note 1) at 3.

[4] Ibid at 3.

[5] Phoenik Pak 'Haste Makes E-Waste: A Comparative Analysis of How the United States should Approach the Growing E-Waste Threat' (2008) 16 *Cardozo J Int'l & Comp L* 254. It has also been

guise of it being reusable and re-sellable goods.[6] Such shipment is also due to the lower cost of living in such countries, as well as lenient environmental regulations.[7]

Re-use can extend the product life-cycle of some EEE, and can assist with availability of technology for citizens in developing countries and LDCs that may not be able to afford brand new EEE.[8] However, unusable parts of these EOL EEE that have been refurbished are discarded in open dumpsites or have simply been crudely burnt. This manner of disposal is hazardous to human health and the environment. The shipment of EOL EEE for re-use in developed and developing countries is a source of revenue therein, since recyclers in the informal markets for re-use can extract valuable substances such as copper and iron from EOL mobile phones,[9] and other equipment. Nevertheless, while the notion of shipment for disposal and/or re-use is established, it is a fundamental contention that such shipments for re-use are the main drivers for importation of e-waste into developing countries and LDCs. With large volumes of re-usable computers and other EEE imported into these countries, and about 1,200,000 tonnes of general EEE and 35-70% of used EEE imported into Nigeria,[10] approximately 75% of such imports are unusable and irreparable. A majority ends up being stockpiled as *junk*, and is dumped or burnt in open dumpsites, with little or no environmental safeguards.[11] Accordingly, the volumes of e-waste being generated in

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[6] 'The e-Waste Crisis' E-STEWARDS *http://www.e-stewards.org/ewaste_crisi.html,* accessed on 29 October 2010.

[7] J W Donald 'The Bamako Convention as a Solution to the Problem of Hazardous Waste Exports to Less Developed Countries' (1992) 17 *Colum J Envtl L* 419 at 425.

[8] Hannah G Elisha 'Addressing the E-Waste Crisis: The Need for Comprehensive Federal E-Waste Regulation within the United States' (2010 -2011) 14 *Chap L Rev* 195 at 205.

[9] Dejo Olowu, 'Menace of E-Wastes in Developing Countries: An Agenda for Legal and Policy Responses' (2012) 8 *Law Env't & Dev J* 61 at 63.

[10] An analysis of EEE import estimates conducted in 2010 reveal that 145 containers of used EEE and 116 containers of new EEE were imported by ship into Nigeria between January and March 2010. See Olakitan Ogungbuyi., Innocent Chidi Nnorom, Oladele Osinbanjo and Mathias Schluep *e-Waste Country Assessment Nigeria*, e-Waste Africa Project of the Secretariat of the Basel Convention, May 2012 at 50, available at *http://ewasteguide.info/files/Ogungbuyi_2012_BCCC-Empa.pdf*; accessed 9 December 2015; 'Where are WEee in Africa? Findings from the Basel Convention E-Waste Africa Programme,' at 22, available at *http://www.basel.int/Portals/4/download.aspx?d=UNEP-CHW-EWASTE-PUB-WeeAfricaReport.English.pdf*, accessed 9 December 2015.

[11] Elisha, above (note 8) at 205.

developing countries are astronomical with a 2011 report noting that Nigeria generated approximately 1,100,000 (One million, one hundred thousand) tonnes of e-waste per year.[12]Therefore, while re-use is a driver of the used electronics trade,[13] the effective management of this *junk* or e-waste imported with re-usable EEE is the line of argument which this thesis advocates, in view of the fact that such shipments for re-use facilitates the illegal trade in e-waste.

E-waste is the fastest growing waste stream in the United Kingdom (UK), the United States (U.S.) and other industrialised nations in the past decade,[14] and it contains a mixture of toxic substances that have fatal consequences for human health and environment when crudely disposed. E-waste is disposed in developing countries in unregulated, open dumpsites, rather than in registered landfills, incinerators or through proper recycling methods, and this has become a cause of global concern. Accordingly, effective management of e-waste in these countries requires an approach which is embedded in the concept of sustainable development and through the extended producer responsibility (EPR) principle. The thesis introduce this principle, and argues that it seems the most practicable tool to be utilised in the effective management of e-waste in any jurisdiction, because it promotes the idea of sustainable development.

Although the general management of waste is regulated by international and regional waste instruments, specific domestic legislation geared towards the

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[12] WEee Africa Report' above (note 10) at 22.

[13] Ramzy Kahhat 'Electronic Waste – Environment and Society' in Klaus Hieronymi, Ramzy Kahhat and Eric Williams *E-Waste Management – From Waste to Resource* (2012) 14.

[14] An estimated 50 million tonnes of e-waste is produced each year. The U.S. discards 30 million computers every year, and 100 million phones are disposed of in Europe each year. See 'UNEP Backs Action for E-Waste Regulation in Africa,' available *at http://www.africainstitute.info/UNEP_EA*, accessed on 23 May 2011. See also 'E-Waste Guidelines for Kenya,' available *at http://www.gesci.org/e-waste-guidelines-for-Kenya.html*, accessed on 20 May 2011 and Elisha, above (note 8) at 199. Waste electrical and electronic equipment (WEEE) is the fastest growing waste stream in the European Union, and is expected to reach 12 million tonnes a year by 2020. See European Commission 'Being wise with waste: the EU's approach to waste management' (2010) Publications Office of the European Union: Luxembourg, Belgium at 14, available at *ec.**euro**pa.**eu**/environment/**waste**/.../WASTE%20BROCHURE.pdf,* accessed on 02 June 2015.

management of e-waste is required in sub-Saharan African jurisdictions. This thesis, therefore evaluates the e-waste regulations in South Africa and Nigeria, specifically assessing the extent to which laws and policies are oriented to sustainable development, and the extent of implementation and enforcement by government and industry. While domestic legislation presents a beacon for the management of e-waste in any jurisdiction, Probst and Beierle emphasise that:[15]

> the goal of any effective hazardous waste management program is changing the behaviour of those organizations that manage hazardous wastes. The key components of building this goal are, first, building an effective regulatory program, and second, developing adequate treatment, storage, and disposal facilities. Both components present challenges to a country seeking to move from a situation in which there is little or no regulation of hazardous waste, to one in which the majority of generators treat, store and dispose of hazardous waste in an environmentally safe way.

This thesis explores Probst and Beierle's postulation against the realities of e-waste policies in Nigeria and South Africa, using South Africa as a model. The thesis utilises the EPR principle as the marker in determining the reality of sustainable e-waste management in both jurisdictions. Accordingly, the management of e-waste must be carried out in contexts that promote sustainable development. Realistically, the problem with e-waste management in developing countries lies in unsustainable disposal practices. Investigations carried out during the course of this research reveal that merely enacting policy to regulate the import of EEE is insufficient without applying sustainable practices to the management of such EEE at their EOL. This study interrogates the extent to which a sustainable EPR approach can be applied in Nigeria, using South Africa as a model, and argues that a sustainable EPR approach must be translated from regulation to effective and practical implementation in a developing Nigeria. The approach to e-waste management differs in both jurisdictions, and definitions of specific terms pertaining to e-waste management are dissimilar. It is therefore useful to explore some definitions that will be utilised in this thesis.

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[15] Katherine N Probst and Thomas C Beierle *The Evolution of Hazardous Waste Programs: Lessons from Eight Countries* (1999) vii.

1.1 The meaning of *waste*

Waste is deemed one of the less charismatic areas of global environmental regulation.[16] It has also been described as a notoriously complex area of law, particularly from the perspective of arriving at a workable definition of the term.[17] Generally, 'waste' is defined as 'an unwanted matter or material of any type, often that which is left after useful substances or parts have been removed,'[18] 'no longer useful and to be thrown away.'[19] Waste may also refer to unwanted materials or substances[20] produced by human activity with the potential to cause pollution when released into the environment, if it causes a risk to human health or exceeds the environmental carrying capacity.[21]

International and European definitions of the term seem to be geared towards the *disposal* of waste. The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal 1989 (hereafter, Basel Convention) regulates the global control and transboundary movement of hazardous waste. It recognises the effect which waste has on both human health and the environment, and defines wastes as 'substances or objects which are disposed of or are

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[16] Maria Lee *EU Environmental Law – Challenges, Change and Decision Making* (2005) 297.

[17] There are manifold reasons why waste can be described as complex: waste can be traded, leading to a tension with the free movement of goods; waste is an emotive subject; reliable statistics on waste are not readily obtained; national policies on recycling have the potential to cause difficulties for the free movement of goods, etc. On the other hand, one may view waste as a concept that can be characterised by its very relativity. The material's 'uselessness', which allows one to qualify it as waste, actually varies according to time and place and people.[17] An object that may appear 'useless' to one person at a given time and place, may be useful and even essential to another at another time and place. See S. Tromans 'EC Waste Law – A Complete Mess?' (2001) 13 *Journal of Environmental Law* 133 in Maria Lee (note 8) at 214; Nicholas de Sadeleer 'Sustainable Development and EU Waste Law' in Hans Christian Bugge and Christina Voigt (eds.) *Sustainable Development in International and National Law* (2008) 400.

[18] Cambridge Advanced Learners Dictionary, 2ed (2005) 1459.

[19] Oxford Advanced Learners Dictionary, 4ed. See also Lawrence Atsegbua *et al., Environmental Law in Nigeria: Theory and Practice* (2004) 101.

[20] See 'Chapter 17 – Waste,' available *at https://www.coursehero.com/file/p5lmbp/Chapter-17-Waste-any-unwanted-material-or-substance-that-results-from-a-human/*, accessed 8 December 2015.

[21] See generally D K Asante-Duah *Hazardous Waste Risk Assessment* (1993) 21, 27.

intended to be disposed of, or are required to be disposed of by the provisions of national law.'[22] In European Community law, the concept of waste is defined in Directive 2008/98/EC[23] as 'any substance or object which the holder discards or intends or is required to discard.'[24] Thus, any substance that falls under this definition is subject to the administrative obligations relating to the collection, storage, transportation, international transfer and treatment methods stemming from the various waste directives and regulations.[25] Therefore, this thesis defines waste as any substance or object which is no longer useful to the owner or holder, and should therefore be discarded.

1.1.2 When can waste be regarded as hazardous?

In classifying a waste as *hazardous*, it is important to note that the quality of waste, the manner and conditions of handling and the susceptibility of humans or any other organisms can be used to determine the degree of risk posed by a waste.[26] Therefore, hazardous waste is defined in three ways:[27]

- 'Waste that has the potential, even in low concentrations, to have a significant adverse effect on the public health and the environment because of the inherent toxicological, chemical and physical characteristics.'

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[22] Article 2 (1) of the Basel Convention 1989. This definition is replicated in Article 1 (1) of the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa 1991.

[23] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, available at *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098*, accessed on 20 January 2014.

[24] 'Holder' refers to the producer of the waste or the natural or legal person who is in possession of it. See Article 3(1) and 3 (6) of the 2008 Directive.

[25] This definition of the concept of waste laid down in Directive 2008/98/EC constitutes the keystone of all sectoral regulation on waste products, including the EC rules pertaining to the transfrontier movement of waste. See Nicholas de Sadeleer, above (note 15) at 407.

[26] Annette Naude *Conceptualising Waste Management* 1ed (2010) 18.

[27] Ibid at 21.

- ‘Waste that may by circumstances of use, quantity, concentration or inherent physical, chemical or infectious characteristics, cause ill-health or increase mortality in humans, fauna and flora, or adversely affect the environment when improperly treated, stored, transported or disposed of.’

- ‘Any inorganic or organic element or compound that, because of its toxicological, physical, chemical or persistency properties, may exercise detrimental acute or chronic impacts on human health and the environment... These characteristics may contribute not only to the degree of hazard, but are also of great importance in the ultimate choice of a safe and environmentally acceptable method of disposal.’[28]

The potential for hazardous waste to pose a direct or indirect threat to human health or the environment, owing to the variety of risks it introduces,[29] brings e-waste under the specific umbrella of a hazardous waste.[30]

[28] Hazardous wastes can also be referred to as ‘any waste that directly or indirectly represents a threat to human health or the environment by introducing one or more of the following risks: explosion or fire; infection, pathogens, parasites or their vectors; chemical instability; reactions or corrosion; acute or chronic toxicity; cancer; mutations, tumours or birth defects; ecotoxicity, or damage to ecosystems or natural resources; accumulation in biological food chains, persistence in the environment or multiple effects, so that it requires special attention and cannot be released into the environment, or be added to sewage or be stored in a situation which is either open to the air or from which leachable water could be produced.’ See G Noble (ed.) *Hazardous Waste in South Africa* (1992) 4 at 4-5 in Michael Kidd *Environmental Law* (2008) 162.

[29]Ibid. It must be noted that there are different waste types, which include solid, liquid, gaseous or radioactive water, and which are often categorised according to their source. See ‘Waste Management,’ available at *http://www.libraryindex.com/pages/3430/Waste-Management.html*, accessed on 20 January 2010. See also C Bosman ‘Integrated Waste Management’ in H A Strydom and N King *Environmental Management in South Africa* 2ed (2008) 700.

[30] This is also supported by the fact that under the Basel Convention, electronic and electrical wastes may fall under the definition of Wastes contained in Article 1 (1) (a), since they contain Annex I material (mercury and copper constituents), causing them to exhibit an Annex III characteristic (ecotoxics which are capable by any means after disposal of yielding another material e.g. leachate). See Annex IX of the Basel Convention 1989, available at *http://www.basel.int/Portals/4/Basel%20Convention/docs/text/BaselConventionText-e.pdf,* accessed on 8 November 2013.

1.1.3 What is electronic waste (e-waste)?

There is no international definition of the term e-waste, and more often than not, it appears that each jurisdiction adopts a working definition of the term in line with prevailing circumstances surrounding the production, importation and handling of EEE. Thus, many definitions of e-waste have been proffered by various organisations in an attempt to find a universal definition. The UN Environmental Programme (UNEP) defines e-waste as 'any electrically powered appliance that fails to satisfy the current owner for its originally intended purpose.'[31] The Organisation of Economic Co-operation and Development (OECD) also defines e-waste as 'any appliance using an electric power supply that has reached its end-of-life.'[32] Perhaps the most useful definition is that adopted by the European Council Directive 2012/19/EU on Waste Electrical and Electronic Equipment which defines e-waste as 'waste electrical and electronic equipment ('WEEE') which means electrical or electronic equipment, and includes all components, sub-assemblies and consumables which are part of the product at the time of discarding.'[33] The Basel Action Network, one of the most influential non-governmental organisations (NGOs) in the e-waste arena,[34] also defines e-waste to 'encompass a broad and growing range of electronic devices ranging from large household appliances such as refrigerators, air conditioners, hand-held cellular phones, personal stereos, and consumer electronics to computers.'[35]

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[31] UN Environment Programme, Division of Technology, Industry, and Economics, Sustainable Consumption & Production Branch (UNEP DTIE SCP Branch) 'E-Waste Management,' available at *http://www.unep.fr/scp/waste/ewm/faq.htm*, accessed on 20 May 2009.

[32] OECD, *Extended Producer Responsibility: A Guidance Manual for Governments,* OECD (2001), Paris in D.S. Khetriwal, P. Kraeuchi and R. Widmer, 'Producer responsibility for e-waste management: key issues for consideration – learning from the Swiss experience' (2009) 90 (1) *Journal of Environmental Management* 153 at 254.

[33] Article 3(1) *(e)* of EC Directive 2012/19/EU. Text available *at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:01:EN:HTML,* accessed on 31 March 2011.

[34] Kahhat, above (note 13) at 13.

[35] The Basel Action Network (BAN) & Silicon Valley Toxics Coalition (SVTC) 'Exporting Harm: The High-Tech Trashing of Asia' February 25, 2002 at 5, available at *http://www.ban.org/E-waste/technotrashfinalcomp.pdf,* accessed on 08 February 2013.

For the purposes of this thesis, electronic waste is defined as waste electronic and electrical equipment (WEEE) that are used or discarded and have reached their EOL usage. WEEE are habitually utilised by consumers and include irreparable or obsolete devices such as TVs, computers, monitors, entertainment electronics, mobile phones, etc. and other items that have been discarded by their original users.[36] Oswald and Reller describe e-waste as a 'complex waste category in terms of the variety of items that qualify as e-waste.'[37] It is differentiated from second-hand electrical and electronic equipment (SHEEE) or used electrical and electronic equipment (UEEE), which refers to 'items that are used again, either directly or after some form of repair or refurbishment.'[38] This distinction is important and is further reflected and analysed in Chapter 5, which analyses e-waste legislation in Nigeria.

1.1.4 The composition of e-waste and its impacts on human health and the environment

E-waste constitutes a complex mixture of materials and components, often containing several hundreds of different substances, many of which are toxic and create serious pollution upon improper disposal.[39] These include heavy metals such as cadmium, lead, chromium, nickel and mercury,[40] and are harmful to human health and the environment, as suggested below.

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[36] Layne Nakagawa 'Toxic Trade: The Real Cost of Electronics Waste Exports from the United States,' available at *http://www.earthtrends.wri.org/pdf_library/feature.php?theme=3&fid=66,* accessed on 10 June 2010.

[37] Irina Oswald and Armin Reller 'E-Waste: A Story of Trashing, Trading and Valuable Resources' at 42, available at *http://www.ingentaconnect.com/content/oekom/gaia/2011/.../art00009,* accessed on 12 April 2015.

[38] Chika Aoki-Suzuki, Magnus Bengtsson & Yasuhiko Hotta 'Controlling Trade in Electronic Waste – An Analysis of International Agreements and National Trade Policies in Asia' in Hieronymi *et al.,* above (note 14) at 165.

[39] UNEP Environmental Alert Bulletin 'E-Waste, The Hidden Side of IT equipment's Manufacturing and Use,' available at *http://www.grid.unep.ch/product/publication/download/ew_ewaste.en.pdf,* accessed on 13 July 2010.

[40] Annex I of the Basel Convention 1989 lists these heavy metals under the categories of waste to be controlled due to their hazardous constituents.

Lead can be found in circuit boards and monitor cathode ray tubes (CRTs). Lead is particularly dangerous to the environment owing to its ability to accumulate and persist in plants, animals and microorganisms.[41] The bioaccumulation of lead in the human body is very harmful, because its primary target is the central nervous system. Lead can cause permanent damage to the brain and nervous system, causing retardation and behavioural changes.[42] Infants and young children are also susceptible, because of the impairments of cognitive and behavioural development it may cause.[43]

Cadmium can be found in surface-mount devices (SMDs), chip resistors, infrared detectors and semiconductors. Like lead, cadmium is particularly toxic to people, because it accumulates in the human body and poses an environmental danger due to both acute and chronic toxicity.[44] Cadmium, which enters the system through the gastrointestinal tract, resides in human kidneys and has a half-life of 10 to 20 years.[45] Renal damage is the most common effect of cadmium toxicity.

Mercury is the most prevalent toxic metal found in e-waste, and about 22% of the annual global consumption of mercury is used in electronics manufacture.[46] It is found in circuit boards, switches, medical equipment, lamps, mobile phones and batteries. Mercury transforms into methyl mercury in water, where it can accumulate in living organisms, typically via fish, concentrating in large fish and humans at the

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[41] BAN & SVTC, above (note 35) at 11; Nakagawa, above (note 36) at 1.

[42] Ibid. See also Badar Salem 'Electronic Waste – A Disaster in the Making,' available at *http://environmentalism.suite101.com/article.cfm/electronic-waste-a-disaster-in-the-making*, accessed on 21 September 2010.

[43] Nakagawa, above (note 36) at 1.

[44] BAN and STVCC, above (note 35) at 9.

[45] Nakagawa, above (note 36) at 1.

[46] Sunil Heart 'Environmentally Sound Management of E-waste: Emerging Issues, Challenges and Opportunities for Material Recovery and Recycling' Paper presented at the Inaugural Meeting of the Regional 3R Forum in Asia, Meguro Gajoen, Tokyo, Japan, 11-12 November 2009, available at *http://www.uncrd.or.jp/env/spc/docs/!st_3r_forum_presentation/session2-2f1_Herat,* accessed on 13 September 2010. The Minamata Convention on Mercury was adopted in 2013. Its objective is to 'protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.' – Article 1. The Convention is not yet in force. The Basel Convention 1989 is read in conjunction with the Minamata Convention in respect of mercury waste.

top of the food chain.[47] Mercury is readily absorbed by the human body, ultimately inhibiting enzymatic activity and leading to cell damage. [48]

Plastics are the most abundant component of e-waste and comprise almost 23% of a typical desktop computer. They are used for insulation, cables and housing for all electronic devices; the variety of products available for recovery complicates the de-manufacturing process. Owing to the complex recovery process, large amounts of plastic e-waste are disposed of through landfills, incinerators and open burning, allowing toxic substances to leach into the environment.[49] For instance, computers have a durable outer shell, usually made of plastic, and various additional plastics in liquid crystal display screens, supports, switch components and internal joints. Inside every computer, a circuit board contains microprocessors and graphics and memory cards made of plastics and metals, including lead soldering. The inner workings also contain beryllium in the motherboard, cadmium in semiconductors, chromium in discs, lead in the batteries and monitors, and mercury in batteries and lamps. The addition of a hard drive, disc drive, fan, and power source unit make computer dismantling and recycling a very complicated task.[50]

The emphasis on the composition of e-waste highlights its debilitating effects on human health and the environment. Considering the volumes of WEEE produced every year,[51] it is critical that less hazardous substances be utilised in the production

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[47] BAN & SVTCC, above (note 35) at 9.

[48] Nakagawa, above (note 36) at 1. See also 'Electronic Waste and Organized Crime – Assessing the Links' Phase II Report for the Interpol Pollution Crime Working Group, May 2009 at 15, available at *http://www.interpol.int/content/download/5367/45070/.../Wastereport.pdf,* accessed on 12 January 2012.

[49] Nakagawa, above (note 36) at 1.

[50] Anne Maczulak *Waste Treatment – Reducing Global Waste* 1ed (2010) 39-40.

[51] The European Environment Agency and United Nations Environment Programme estimate that 40m to 50m tonnes of Waste Electrical and Electronic Equipment are produced every year worldwide and it is increasing three times faster than all other types of domestic waste. See 'E-Waste in Africa' – HP Report 2009 at 2, available at *http://www4.hp.com/.../E-waste_in_Africa_-_HP_report_2009_final_version.pdf,* accessed on 21 September 2010.

of electrical and electronic equipment. This will minimise the impacts of such e-waste on human health and the environment in the event of its improper handling or disposal.

1.2 The disposal of e-waste

The impact of e-waste on human health and environment can be further understood from the point of disposal. The four common methods of e-waste disposal are incineration, land-filling, open dumping and re-use/recycling. However, the most practicable option for e-waste disposal appears to be re-use and recycling.

E-waste can be incinerated if it cannot be re-used or recycled or disposed safely in a landfill, owing to excessive toxicity or the risk of infectious transmission. This technique allows for significant volume reduction and varying magnitudes of toxicity reduction in hazardous waste being treated for re-use or recycling.[52] Incineration differs from pyrolysis, another process of e-waste combustion, in that while pyrolysis is the partial destruction of combustible wastes with heat in the absence of air, yielding a combustible end-product of high calorific value such as coke and charcoal, incineration is the complete destruction of a combustible product with heat in the presence or controlled presence of air, yielding a totally inert product with no calorific value.[53] The downside to incineration is the ability for combustion conditions to change rapidly, leading to the emission of toxic gases from the combustion and leftover residue of e-waste fractions and heavy metals that may be toxic to human health and/or the environment.[54] However, in developing countries that may not have incineration facilities, the unsupervised burning (which differs from incineration) of e-wastes is most often carried out near agricultural land or homes. The fumes emanating from these wastes can constitute some form of discomfort for the dwellers closest to these dumpsites.

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[52] Paul E Rosenfeld and Lydia G H Feng *Risks of Hazardous Waste* (2011) 158.

[53] Naude, above (note 26) at 135.

[54] Naude, ibid.

Landfilling, on the other hand, involves the open dumping of e-waste.[55] A landfill is a natural or man-made depression on a large expanse of land with a soil foundation, and are usually equipped with a double liner and a leak detection system, at least two leachate collection and removal systems, storm water runoff and runoff controls to withstand years of storms, and a cover to prevent wind dispersal.[56] Before any form of hazardous waste or e-waste can be placed in a landfill, it must undergo treatment; if not, the properties of the hazardous waste may remain and may cause damage to all types of landfill liner systems.[57] E-waste is commonly disposed of in landfills where no separate collection and recycling systems have been established.[58] The use of a landfill is a conventional method for the disposal of all types of waste, but in the case of e-waste, it must be regarded as environmentally unsuitable.[59] This is because landfills do not provide a fool proof solution to effective disposal of e-waste, as most landfills are expected to eventually leak, because they were either built prior to the introduction of modern-day designs, or owing to errors in the construction or management of modern-day sites.[60] This leaking contributes to the environmental and health risks to people living in neighbourhoods where landfills are located. Nevertheless, in some jurisdictions, landfills are developed in accordance to certain waste type classifications, and the size of the particular waste stream and potential for significant leachate is taken into consideration before being placed in the appropriate landfills.[61]

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[55] A dump is an area allocated for the public to dispose of unwanted waste. Wastes disposed of at these landfill sites are often not closely monitored. See Alan Finlay 'E-Waste Challenges in Developing Countries: South Africa as a Case Study,' available at *http://www.apc.org/en/system/files/e-waste_EN.pdf*, accessed on 14 October 2013.

[56] The purpose of the cover is to minimise water migration through the landfill, promote drainage and accommodate settling. See Rosenfeld & Feng, above (note 52) at 162.

[57] Ibid. see also Naude, above (note 26) at 138

[58] UNEP 'E-Waste Management' (note 31). See also Jennifer Ann. Hoeveler 'International Approaches to Dealing with Electronic Waste' (2009) 13 *N. Z. J. Envtl. L*. 117 at 118.

[59] Catherine K. Lin, Linan Yan and Andrew N. Davis, 'Globalization, Extended Producer Responsibility and the Problem of Discarded Computers in China: An Exploratory Proposal for Environmental Protection' (2001-2002) 14 *Geo Int'l Envt'l L. Rev.* 525 at 532.

[60] Rosenfeld and Feng, above (note 52) at 160. See also Hoeveler, above (note 58) at 124.

[61] For instance, South Africa. See Naude, above (note 26) at 141.

Conversely, open dumpsites are usually found in developing countries that do not have the landfill/incineration infrastructure in place, and for specific countries that may have these in place, the institutional, legal and financial challenges are copious, and the weak administrative structures result in open dumpsites.[62] Open dumpsites refer to large expanses of land designated for the dumping of municipal waste, hazardous e-waste and other types of waste. The 2014 Waste Atlas Report reveals that of 50 biggest dumpsites in the world, almost all of them are near or even within urban areas, close to natural resources and water resources such as rivers, lakes, oceans, posing threats to marine and coastal pollution as well as to human health and the environment.[63] Additionally, more than 10,000 people in various dumpsites in Ghana and Nigeria, for instance, process e-waste at these dumpsites through open burning to recover metals from e-waste.

The recycling of e-waste, which is an attractive yet viable option for the proper management of e-waste, involves the collection, sorting/dismantling, pre-processing (including sorting, dismantling and mechanical treatment) and end-processing, and is an integral part of the EPR concept, which is discussed in subsequent chapters.[64] An environmentally friendly recycling process combines manual work with mechanical processes to obtain various material fractions from appliances.[65] Two key challenges to the recycling option in any jurisdiction are the implementation or expansion of an e-waste collection system separate from other waste streams, and the reliable avoidance or separation of hazardous substances.[66] This disposal practice is typical in most developing countries in sub-Saharan Africa, but is not formalised. Since most

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[62] Niki Mavropoulou 'Top Trumps for Big Dumps' *Waste Management World,* January – February 2015 at 39.

[63] Ibid. See also Waste Atlas *The World's 50 Biggest Dumpsites* 2014 Report at 11, available at *http://www.atlas.d-waste.com/*, accessed on 20 March 2015.

[64] UNEP 'Recycling- From E-Waste to Resources' July 2009, available at *http://www.unep.org/pdf/.../E-waste_publication_screen_finalversion-sml.pdf,* accessed on 13 October 2013.

[65] Siegfried Kreibe 'Current and New Electronic Waste Recycling Technologies' in Hieronymi *et al.,* above (note 14) at 27.

[66] Ibid at 41.

developing countries lack the capacity and financial means to set up adequate recycling facilities, e-waste is commonly disposed of in open dumpsites rather than being incinerated or landfilled.[67]

These processes of disposal of hazardous waste described above is evocative of *not in my back yard* (NIMBY) syndrome, which has permeated society in the 21st century, and exemplifies public attitudes to hazardous materials in general[68] and e-wastes in particular. NIMBY refers to the 'protectionist attitudes and oppositional tactics adopted by community groups facing an unwelcome land-use development in their neighbourhood such as landfill sites and hazardous waste facilities.'[69] These people concede that these noxious facilities are necessary, but not near their homes.[70] NIMBY syndrome became the 'rallying cry for communities in developed countries to oppose local disposal facilities,' thus making it attractive for developing and developing countries to become an attractive site for illicit disposal of hazardous waste.[71]

1.3 A history of hazardous waste dumping in sub-Saharan Africa

The earliest case of illegal dumping of hazardous waste occurred in Nigeria in 1998. It brought into the limelight the dangers of hazardous waste trade in general, and the need for an international treaty on the control and transboundary movement of hazardous waste. A ship named the *Karin B*, carrying toxic wastes from Pisa, Italy,

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[67] Chukwunonye Ezeah and Jak A Fazakerley 'Scoping Extended Producer Responsibility (EPR) as a tool for Management of the e-waste problem in sub-Saharan Africa: Key Issues for Consideration' at 8, available at *http://www.researchgate.net/publication/262688637_Scoping_Extended_Producer_Responsibility_%28EPR%29_as_a_tool_for_Management_of_the_E-waste_problem_in_Sub_Saharan_Africa_Key_Issues_for_Consideration*, accessed on 21 April 2015.

[68] William C Blackman *Basic Hazardous Waste Management* 3ed (2001) 17.

[69] Michael Dear 'Understanding and Overcoming the NIMBY Syndrome' (1992) 58 (3) *Journal of the American Planning Association* 288. See generally Bula, 'Toxic Waste: Whose Problem is it?' BC Business, May 1987, at 27.

[70] Ibid.

[71] Jefferey D Williams 'Trashing Developing Nations: The Global Hazardous Waste Trade' (1991) 39 *Buff L Rev* 275 at 276-7.

dumped more than 6,000 drums of chlorinated solvents, waste resins and some highly toxic polychlorinated biphenyls (PCBs) in a little port town called Koko.[72] The dumping of these wastes was facilitated by an Italian national who was working in Nigeria at that time and who had obtained a product import license for some other product. He later substituted the shipment stated on the license with these toxic wastes. Unfortunately, the drums containing these toxic wastes were damaged and began to leak, causing serious damage to the environment and health of residents of Koko.[73] The issue of the Koko dump garnered lots of international attention from various environmental bodies around the world. Meanwhile, the Nigerian government demanded that the Italian government do everything possible to evacuate these toxic wastes from its territory back to Italy.[74] After almost a month of diplomatic and executive contracts, the Italian authorities accepted the responsibility to ship the cargo back to Italy.[75] However, the Nigerian workers who packed the drums into containers for re-transportation to Italy, totally unaware of these wastes' dangerous and harmful effects, suffered severe chemical burns, while others were hospitalised and one person was paralysed.[76] Although Italy's government ordered the waste repatriated, local authorities in Italy objected to the return of the waste, causing the *Karin B.* to wander

[72] Koko is a small port town in the south-west of Bendel State (presently the two states - Edo and Delta States), approximately 40km from Benin City, the capital of Nigeria's Edo State. At the time, Koko town had a population of more than 15,000 persons and was surrounded by popular commercial towns such as Warri and Benin City.

[73] Z. Lipman 'Transboundary Movement of Hazardous Waste: Environmental Justice Issues for Developing Countries' (1999) *Acta Juridica* 267. See also Mike Ikhariale 'The Koko Incident, the Environment and the Law' in Folarin Shyllon (ed.) "The Law and the Environment in Nigeria" (1989) at 73-74 and International Network for Environmental Compliance and Enforcement Seaport Environmental Security Network 'The International Hazardous Waste Trade Through Seaports' – Working Paper, 24 November 2009 at 1, available at *http://www.inece.org/seaport/SeaportWorkingPaper_24November.pdf*, accessed on 20th June 2010.

[74] The Koko incident led to the enactment of two laws in Nigeria, namely the Federal Environmental Protection Agency (FEPA) Decree No. 58 of 1988 (now defunct and replaced by the National Environmental Standards and Regulations Enforcement Agency [NESREA] Act 2007) and Harmful Waste (Special Criminal Provisions) Decree No.42 of 1988. These laws are analysed in Chapter 5.

[75] Ikhariale, above (note 73) at 74.

[76] A Vir 'Toxic Trade with Africa' (1989) 23(1) *Environment, Science and Technology Journal* 23 at 24.

the seas after France, Britain, Spain, West Germany and the Netherlands refused to let the ship offload its cargo, until Italy finally accepted the waste.[77]

Decades later, the ship the *MV Nashville*, a Maersk vessel from Rotterdam, was caught attempting to dump lead batteries into Nigerian waters in 2010. Other e-waste such as broken TVs and unusable refrigerators were discovered on board. The crew were subsequently arrested, the vessel was detained by port officials, and the Federal Government of Nigeria ordered the ship to return to the Netherlands, from where it originated.[78] In June and December 2010, two ships, the *MV Gumel* and the *MV Vera D*, were arrested and detained at the port of Lagos for carrying eight containers laden with toxic waste and toxic black-and-white TVs.[79] It appears that Nigeria is being used as a dumping ground for e-wastes, especially because most importers from developed countries are aware not only of the lack of stringent environmental regulations regarding electronic products, but also that there is a booming market for EOL electronic goods in Lagos, Nigeria's commercial hub.

This fact was reinforced with the most recent example of e-waste dumping in Africa which occurred in Nigeria in January 2013. On January 5, 2013, the ship the *MV Marivia* was intercepted in Tin-Can Island Port Complex (TCIPC), Apapa, Lagos State. The ship was filled with containers laden with tons of toxic e-waste (used TVs, used computers, used microwaves, pressing irons and stereo sets).[80] The vessel originated from Tilbury in England. The leading environmental agency in Nigeria, the Nigerian Environmental Standards and Regulations Enforcement Agency (NESREA)

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[77] Ibid at 2.

[78] Karen Stephenson 'Recycling Toxic Waste can Save a Life,' available at *http://www.greensolutionsmag.com/back_issues/GSM-Apr11/f2.php,* accessed on 4 February 2013.

[79] 'Nigeria orders return of toxic waste containers to UK,' 11 January 2013, available at *http://premiumtimesng.com/news/114722-nigeria-orders-return-of-toxic-waste-containers-to-u-k.html,* accessed on 13 March 2013.

[80] 'FG Slams $1m fine on importers of e-waste,' available at *http://www.shipsandports.com.ng/2013/news/FG_slams_1m_dollar_fine_on_importers_of_ewaste.php,* accessed on 21 January 2013]. See also 'Nigeria orders return of toxic waste containers to UK,' available at *http://premiumtimesng.com/news/114722-nigeria-orders-return-of-toxic-waste-containers-to-u-k.html,* accessed on 22 January 2013.

had received an alert on the arrival of the suspected illegal shipments of e-waste in two containers on this vessel. NESREA advised operatives of the State Security Services (SSS) to arrest the importers and this was carried out effectively.[81] The Federal Government of Nigeria ordered the ship to pay a fine of US$1m and directed that the ship return immediately to its port of origin in the UK, in accordance with the provisions of Nigeria's Harmful Waste (Special Criminal Provisions) Decree of 1988 (promulgated as an offshoot of the Koko Toxic Waste Dump of 1988 mentioned above). This legislation is analysed in Chapter 5 of this thesis.

The dumping of hazardous wastes has also occurred in other African countries, but none have been e-waste-specific as the examples in Nigeria above; for instance, on 19 August 2006, toxic petrochemical waste was dumped in at least 18 different locations throughout the city of Abidjan.[82] These hazardous wastes were extremely toxic and caused residents of Abidjan to begin complaining of ill health and to seek medical help.[83] By 20 October 2006, at least 10 people died from the effects of the fumes and thousands were hospitalised.[84]

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[81] 'Nigeria orders return of toxic waste containers to UK' above (note 79). See also Godfrey Bivbere 'Danger! Shipload of Toxic Waste at Lagos Port,' available at *http://www.vanguardngr.com/2013/01/danger-shipload-of-toxic-waste-at-lagos-port/,* accessed on 4 February 2013.

[82] The capital of Ivory Coast is Abidjan and is the country's largest city with about 5m inhabitants. Todd Pitman, Hazardous Waste Flows to Poor Nations, Seattle Times, 19 October 2006, available at *http://seattletimes.nwsource.com/html/health/2003311777_ivorywaste18.html,* accessed on 23 May 2011. See also Lydia Polgreen and Marlise Simons, 'Global Sludge Ends in Tragedy for Ivory Coast,' *New York Times*, 2 October 2006, available at *http://www.nytimes.com/2006/10/02/world/africa/02ivory.html*, accessed on 10 July 2010. See also Lisa Widawsky 'In My Backyard: How Enabling Hazardous Waste Trade to Developing Nations can Improve the Basel Convention's Ability To Achieve Environmental Justice,' available at *http://www.ecologiaradical.com.mx/Biblioteca/IN%20MY%20BACKYARD%20HOW%20ENABLING%20HAZARDOUS%20WASTE.pdf*, accessed on 26 August 2010.

[83] It was reported that symptoms exhibited by some residents included nosebleeds, nausea, vomiting, headaches, skin and eye irritations and respiratory symptoms. Severely affected patients presented respiratory diseases, dehydration and internal bleeding. 'Press 'Two Guilty in Ivory Coast Waste Dumping' 23 October 2008, available at *http://www.msnbc.msn.com/id/27342632/ns/world_news-africa/t/two-guilty-ivory-coast-toxic-waste-dumping/,* accessed on 15 May 2011. See also UN News Centre;' 'Deadly Toxic Waste Dumping in Cote D'Ivoire Clearly a Crime' - UN Environmental Agency, available at *http://www.un.org/apps/news/story.asp?NewsID=20083&Cr=ivoire&Cr1,* accessed on 14 May 2011. See also 'Deadly Cargo dumped in the Ivory Coast', 15 September 2006, available at *http://www.greenpeace.org/international/en/news/features/ivory-coast-toxic-dumping/?accept=6daf3ea234605ac13b16bc1f2035b557,* accessed on 20 March 2011.

[84] Ofeibea Quist-Arcton 'Ivory Coast Tragedy Exposes Toxic Flow to Poor,' available at *http://www.npr.org/templates/story/story.php?storyId=6354149,* accessed on 20 March 2011.

The illegal dumping of hazardous wastes in Abidjan caused huge concerns throughout Africa and the international community, particularly because at the time, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes 1989 had been in force for more than 14 years, especially as the Basel Ban Amendment had been passed since 1995 (an in-depth analysis of this treaty is carried out in Chapter 3 of this thesis) though it had not yet been ratified by Ivory Coast.[85] The four instances cited above highlights the fact that illegal and transboundary dumping of hazardous waste[86], particularly e-waste, from developed to developing countries is a serious national and international problem. In all four instances, it was eventually discovered that the magnitude of the toxic wastes brought into, and those proposed to be brought into these countries, would have been capable of not only causing extreme environmental pollution, but have also resulted in serious biological damage to the surrounding areas, towns and villages.[87]

1.4 The problem of e-waste

2014 e-waste estimates reveal that, of 41.8m tonnes of EEE discarded globally, less than one-sixth is thought to have been properly recycled or made available for re-use.[88] According to 2009 estimates, between 50% and 80% of e-waste collected for recycling in developed countries every year is being exported illegally to developing countries,[89]

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[85] The Basel Ban Amendment was adopted on 22 September 1995 at the third meeting of the Conference of the Contracting Parties to the Basel Convention 1989, which took place in Geneva from 18 to 22 September 1995. See 'Basel Convention,' available *at http://www.basel.int/ratif/ban-alpha.htm,* accessed on 27 May 2011.

[86] Transboundary dumping of hazardous waste refers to the – often surreptitious – exporting of hazardous waste by developed and industrialised countries to developing nations, usually sub-Saharan African countries. See Olurominiyi Ibitayo 'Transboundary dumping of hazardous waste,' available at *http://www.eoearth.org/view/article/156687*/, accessed on 20 June 2010.

[87] Soji Awogbade 'Legal Implications of Toxic Waste Problem,' *The Guardian*, 19 June 1988 at 6.

[88] Waste Management World 'Less Than 16% of Global E-Waste Recycled or Reused, Finds Report' 20 April 2015, available at *http://www.waste-management-world.com/articles/2015/04/less-than-16-of-global-e-waste-recycled-or-reused-finds-report.html?cmpid=EnlWMWApril212015,* accessed on 21 April 2015.

[89] ICCM e-waste Paper, above (note 1) at 6.

as shown above. This illegal exporting directly contravenes the Basel and Bamako Conventions. However, the most important contributor to this problem is the fact that the Basel Convention does not apply to SHEEE, and e-waste is sometimes exported under the pretence that it is second-hand goods, despite its actual intended use as materials for resource recovery.[90] Aoki-Suzuki *et al* argue that the classification of wastes, non-wastes and second-hand goods within e-waste is sometimes confusing.[91] They note that this difficulty in distinction also creates difficulties in collecting data and thereby in monitoring the flow of SHEEE, which is important to develop measures to control the trade.[92]

One can argue that the reasons behind the regular dumping of e-waste in these countries is a number of challenges they face. These challenges include inadequate awareness and public education on the dangers associated with e-waste; a lack of environmental standards and legislation dealing specifically with e-waste and, where they exist, the attendant lack of compliance and enforcement measures;; a lack of national infrastructure such as recycling/collection facilities and a lack of a good information system concerning the storage, separation, collection, transportation or disposal of e-waste for formal recycling; a lack of public-private partnerships in e-waste control; poor corporate responsibility by the industry; a lack of public opposition owing to a lack of information on the dangers involved and weak global and regional responses to e-waste issues.[93] Lagos is a hub for e-waste dumping in Africa, and the continued exportation of e-waste to this jurisdiction is made possible by one or more of the challenges described above. Thus, the global exporting of e-waste under the guise of SHEEE to developing countries persists, despite the adoption of the Basel and

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[90] Aoki Suzuki *et al.,* above (note 38) at 168.

[91] In most cases, at the national level, second-hand and waste products are by and large invisible to national statistics in production, sale and trade-in-goods. Hong Kong and Australia were the first countries to develop guidelines for distinguishing between used goods and e-waste. See ICCM e-waste background, above (note 1) at 7.

[92]Aoki Suzuki *et al.,* above (note 38) at 168.

[93] N S Benebo 'Status of E-Waste Control in Nigeria' Paper presented at the Workshop on E-waste in West Africa, Accra and Ghana, 24 June 2009, available at *http://www.inece.org/ewaste/02_benebo.pdf,* accessed on 20 September 2010.

Bamako Conventions. Nevertheless, Alexander and Reno assert that there are 'new regulatory reforms being developed at different levels from Basel, either self-imposed by companies wishing to promote images of producer responsibility or enforced by new national and sub-national protocols.'[94] Although the domestication and implementation of both treaties by Nigeria may be indicative of the country's willingness to tackle e-waste imports, the adoption of specific sustainability-oriented e-waste legislation that prohibits illegal e-waste imports will have a greater effect in this jurisdiction. Such an approach, geared towards the sustainable management of e-waste, is encapsulated in the EPR principle.

1.5 Achieving sustainable e-waste management through the principle of extended producer responsibility

As described above, the scale and impacts of e-waste on human health and the environment require an approach that will prevent long-term environmental problems. Sustainable development refers to an integrative concept that advocates efforts to achieve progress (development),[95] which must be possible to maintain over the long term (sustainable).[96] The concept of sustainable development is one which reflects a consciousness or knowledge of the earth's systems, which includes knowledge of the linkages between human, socioeconomic and environmental systems.[97] Therefore, it can be viewed as an approach to decision-making that takes a long-term focus, incorporates social, economic and environmental factors, and recognises the interdependence of domestic and global activities.[98] It means working to ensure a fair

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[94] Catherine Alexander and Joshua Reno 'Introduction' in Alexander and Reno, above (note 2) at 18.

[95] The World Commission on Environment and Development (WCED) Brundtland Report 1987 defined 'sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' See Report of the World Commission on Environment and Development, *Our Common Future* United Nations (1987) at 17, available at *http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf,* accessed on 18 June 2013.

[96] M C Cordonnier-Segger 'Sustainable Development in International Law' in Bugge & Voigt, above (note 15) at 88.

[97] Tracy-Lynn Field 'Sustainable Development versus Environmentalism: Competing Paradigms for the South African EIA Regime' (2006) 123 (3) *South African Law Journal* 409 at 410-4.

[98] 'The Role of Government and Policy in Sustainable Development' – Introductory note by Mr. Richard Balhorn' (2005) 19 1 *McGill Int'l J. of Sust Dev. Law & Pol'y* 20.

distribution of the costs and benefits of development between the nations of the developed and developing worlds.[99] The concept recognises that environment and development are 'interwoven into a seamless network of causes and effects.'[100] In this sense, sustainable development is not a fixed state of harmony, but a *process of change* in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs.[101]

Having emphasised that sustainable development envisages a *process of change* that incorporates social, environmental and economic considerations, this thesis suggests that e-waste management involves identifying key players who will be responsible for the eventual generation and disposal of e-waste. Since the handling, management, exporting and trade in general waste is already covered by the Basel Convention 1989, it is therefore expedient that there should be a more radical solution to the massive generation of e-waste in developed and developing countries. This process of change, which incorporates socioeconomic and environmental considerations, and the allocation of responsibilities in achieving sustainable e-waste management, are attainable through EPR.

EPR can be broadly defined as:

> an environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product, by making the manufacturer of the product responsible for the entire life-cycle of the product, and especially for the take-back, recycling and final disposal of the product. The Extended Producer Responsibility is

[99] Ibid.

[100] *Our Common Future,* above (note 93) at 13. See also Dire Tladi *Sustainable Development in International Law: An Analysis of Key Enviro-Economic Instruments* (2007) 24.

[101] This statement gives credence to the undeniable fact that the Brundtland Report exposed the world to the concept of sustainable development as a broad global policy objective. See P. Behr, 'Environmental Issues Emerge as Key to Trade Pact on Hill,' *Washington Post* (17 March 1993) A14 and K. Tumulty, 'Free-Trade Talks Raise Questions that Alarm Environmentalists,' Los Angeles Times (17 November, 1991) at 19. See also Marie-Claire Cordonier Segger, Ashaq Khalfan and Salim Nakjavani, *Weaving the Rules for Our Common Future: Principles, Practices and Prospects for International Sustainable Development Law* (2002) Centre for International Sustainable Development Law at 15; and *Our Common Future* (note 83) at 15.

> implemented through administrative, economic and informative instruments. The composition of these instruments determines the precise form of the Extended Producer Responsibility.[102]

In terms of the EPR principle, the producer's responsibility for a product is extended to the post-consumer stage of the product life-cycle, including its final disposal.[103] This feature of EPR derives from the polluter-pays principle (PPP). PPP is an environmental principle that is recognised as part of international environmental law. It requires that whoever is responsible for damage to the environment (the polluter) should bear the costs associated with the degradation.[104] The EPR principle essentially treats electronic equipment manufacturers as polluters who are required to take financial responsibility for the entire life-cycle of their hazardous products, especially for the take-back, recycling and final disposal of their old and obsolete products.[105] The rationale is that when producers are required to assume ultimate responsibility for the negative environmental and health-related externalities of their products, they have greater incentive to design electronics that are both cheaply and easily recyclable, and that are free from toxins.[106]

The EPR principle imposes specific responsibilities on producers of EEE. Economic responsibility, which requires manufactures to pay all or a portion of EOL management costs, and physical responsibility, which requires manufacturers to take

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[102] Thomas Lindhqvist, 'Extended Producer Responsibility in Cleaner Production – Policy Principle to Promote Environmental Improvements of Product Systems (2000) ii.

[103] Vincenzo Toretta *et al.,* 'Management of Waste Electrical and Electronic Equipment in two EU Countries: A comparison' (2013) 33 *Waste Management* 117-18.

[104] Roy E Cordato 'The Polluter Pays Principle: A Proper Guide for Environmental Policy' (2001), available at *http://www.iret.org/pub/SCRE-6.PDF*, accessed on 20 October 2013; D Tladi, above (note 99) at 14-18. See Hans Christian Bugge, 'The Principles of Polluter Pays in Economics and Law' in Erling Eide and Roger van den Bergh, (eds.) *Law and Economics of the Environment* (1996) 53. See also Zelalem Tesfaye Bogale, 'E-Responsibility: E-Waste, International Law and Africa's Growing Digital Wasteland' (2011-2012) 18 *U. C. Davis J. Int'l L. & Pol'y* 225 at 242.

[105] Pak, above (note 5) at 275.

[106] Ibid. See also Bogale, above (note 104) at 243.

physical possession of their products after consumers discard such products.[107] The concept also provides environmental and economic benefits. As an environmental benefit, a manufacturer take-back requirement would reduce the amount of e-waste headed to landfills and incinerators in developing countries. If manufacturers know that they will bear the burden of recycling electronic products, they will likely be motivated to re-design their EEE in order to avoid environmental impacts.[108] As an economic benefit, the concept allows producers to assess the marginal costs and benefits of product redesign, given the prospect of product take-back or the fee structure imposed for e-waste management.[109]

The EPR approach has been implemented in the European Union through the Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC.[110] This Directive, which implements the EPR principle through regulatory mechanisms and voluntary take-back schemes by manufacturers/producers,[111] has been

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[107] See Michael W Toffel, 'End-of-life Product Recovery: Drivers, Prior Research, and Future Directions' 4 (17-18 October 2002) (unpublished paper presented at Conference on European Electronics Take -Back Legislation: Impacts on Business Strategy and Global Trade, Fontainebleau, 17-18 October 2002 (listing economic, physical, information, and liability responsibilities), available at *http://faculty.haas.berkeley.edu/toffel/papers/EOLTakebackLitReview.pdf,* accessed on 12 January 2008. See also Noah Sachs 'Planning the Funeral at the Birth: Extended Producer Responsibility in the European Union and the United States' (2006) 30 *Harv. Envt. L .Rev*. 51 at 63-64.

[108] Sachs, above (note 107) at 63-64.

[109] Ibid at 79.

[110] It designated e-waste as a priority waste stream in 1991 and enacted a series of product-oriented directives on electrical and electronic equipment that began to progressively incorporate elements of EPR. This Directive has now been amended by the Directive 2012/19/EU. Other directives on e-waste include Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment. See also Panate Manomaivibool 'Advancing the Frontier of Extended Producer Responsibility – The management of waste electrical and electronic equipment in non-OECD countries' (2011) Doctoral Thesis 15.

[111] Directive 2002/96/EC on waste electrical and electronic equipment (WEEE Directive) refers to 'principle of producer responsibility' with a view to shifting responsibility from governments to producers via a paradigm shift from the traditional 'cradle to grave' product cycle to a closed-loop 'cradle to cradle' product cycle. Directive 2002/96/EC also provides in Paragraph 5 of its Preamble that '…The European Parliament… asked the Commission to present proposals for Directives on a number of priority waste streams, including electrical and electronic waste, and to base such proposals on the principle of producer responsibility.' Text of the Directive 2002 available at *http://ec.europa.eu/environment/waste/weee/legis_en.htm,* accessed on 24 May 2010. See also Manomaivibool, above (note 110) at 15; Pak, above (note 5) at 248, 259; Bogale, above (note 104) at 243.

implemented by its member states.[112] For instance, the Netherlands utilise a voluntary EPR take-back scheme called ICT Milieu, which uses a two-tier system to collect IT equipment, printers, faxes, photocopiers and other telecommunication equipment through municipal collection sites and regional collection and sorting deports; while the Nederlandse Verwijdering Metalektro Producten (NVMP)[113] is a producer responsibility organisation that collects white and brown goods (refrigerators and electrical consumer products such as TVs) for recycling.[114]

EPR is a 'next-generation principle' that incorporates the environmental, economic and social objectives of sustainable development.[115] It is a policy concept rather than a policy instrument, and can be implemented through a variety of voluntary and/or mandatory instruments.[116] It is a responsibility taken on by industry to ensure proper e-waste management. This thesis suggests that a more practical approach to e-waste management involves utilising and incorporating the EPR principle as a means to ensure effective management and regulation of e-waste in Nigeria.

1.6 Statement of the Research Problem

The global export of e-waste to developing countries under the guise of second-hand or used EEE to developing countries persists. Nigeria is currently the 'hub' of e-waste

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[112] Switzerland was the first country in the EU to pass an EPR Law for WEEE called Ordinance on the Return, the Taking Back and the Disposal of Electrical and Electronic Appliances (ORDEA) in 1998. See Manomaivibool, (note 109) at 19; see also Sarah Fehn, 'From iPOD to e-Waste: Building a Successful Framework for extended Producer Responsibility in the United States' (2011-2012) *41Pub. Cont. L. J.* 173 at 187; INSEAD Faculty & Research Working Paper 'Individual Producer Responsibility: A Review of Practical Approaches to Implementing Individual Producer Responsibility for the WEEE Directive' (2010) at 40, available at *http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1698695,* accessed on 19 October 2013.

[113] The Dutch Foundation of Metalektro Removal Products.

[114] INSEAD Working Paper, above (note 112) at 30.

[115] Sachs, above (note 107) at 80.

[116]Anton Nahman 'Extended producer responsibility for packaging waste in South Africa: Current approaches and lessons learned' (2010) 54 (3) *Resources, Conservation and Recycling* 155 at 156. See generally I C Nnorom and O Osibanjo, 'Overview of electronic waste (e-waste) management practices and legislations, and their poor applications in the developing countries' (2008) 52 *Resources, Conservation and Recycling* at 843-858; Rolf Widmer *et al.,* 'Global Perspectives on e-waste' (2005) 25 *Environmental Impact Assessment Review* 436-458.

dumping in Africa. Despite the adoption of the Basel and Bamako Conventions, SHEEE is imported daily into Nigeria. In the absence of national infrastructure such as disposal or recycling/collection and disposal facilities, a lack of awareness regarding the human and environmental implications of crude e-waste recycling and inadequacy of existing e-waste legislation, there appears to be an e-waste crisis in Nigeria.

Consequently, the adoption and implementation of an extended producer responsibility (EPR) programme with the physical, financial and informative responsibility placed on the importers of new EEE or SHEEE into Nigeria is imperative. There is an urgent need to develop strategy and policy involving a collaborative relationship between government and other stakeholders in the e-waste industry to achieve a lasting solution to the uncontrolled importation of e-waste into Nigeria for disposal under the guise of used EEE for recycling. However, the development and implementation of such a programme cannot be carried out in abeyance without recourse to a study of the implementation of same in a country with a similar jurisdiction like Nigeria. South Africa's approach to e-waste management has been carried out in a sustainable manner, using an EPR approach as the blueprint in achieving and developing its e-waste law and policy.

1.7 Rationale for the research

A responsible approach to e-waste means approaching e-waste management in a sustainable manner in order to ensure that the e-waste crisis in a developing country is effectively managed and controlled. The regulation of e-waste at the national level is the most effective way in which the trade in and ineffective disposal of e-waste can be controlled. EPR-based e-waste legislation facilitates the imposition of responsibility on manufacturers of EEE, and may include the placement of further responsibility on other players in the EEE chain – retailers and consumers. From the policy perspective, the question is how best to incorporate and implement the EPR principle. Implementation raises further questions: *how effectively can mandatory legislation be implemented?* And: *what role does voluntary industry play in achieving sustainable management of e-waste through the implementation of the EPR principle?*

This thesis seeks to provide a prototype for a developing Nigeria faced with the continuous importation of e-waste into its jurisdiction. It uses South Africa (SA) as the model for Nigeria, because of the proactive waste legislation existing in SA as a jurisdiction and the perceived synergy between industry and government in e-waste management. While acknowledging that comparing wastes between countries can be a difficult task, since different definitions of waste may be used in different contexts,[117] this thesis finds it necessary to compare the South African EPR approach to e-waste management with that of Nigeria, with a view to highlighting key areas where Nigeria is lacking in e-waste management. Thus, it is necessary to emphasise the need for both voluntary and regulatory take-back schemes, since their co-existence will ensure proper and effective e-waste management. The thesis further provides a realistic, informative paradigm about EPR which policy-makers, policy advocates and environmentalists can relate to in EEE and e-waste management. Hence, the sustainable EPR concept, which is in line with sustainable development, underlines each chapter of this thesis.

1.7.1 E-waste in South Africa

South Africa is a middle-income country in southern Africa that also produces significant amounts of e-waste. Many look to it as a leader on the African continent for developing more sustainable practices,[118] because its development rate has surpassed many other countries in sub-Saharan Africa. E-waste or WEEE is currently the fastest-growing waste stream in South Africa as the general population's access to electronic goods in the last decade has increased, especially access to mobile phones.[119] WEEE utilised in households were being directed to landfills and incinerators, while industrial companies directed their WEEE to small-scale recycling

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[117] Megan Landon *Environmental Health and Sustainable Development – Understanding Public Health* (2006) at 73.

[118] Mary Lawhon 'Contesting power, trust and legitimacy in the South African e-waste transition' (2012) *45 Policy Sci.* 69 at 70.

[119] R Lombard and R Widmer 'e-Waste Assessment in South Africa: A Case Study of the Gauteng Province. EMPA – Swiss Federal Laboratories for Materials Testing and Research, Switzerland, available at *http://ewasteguide.info/ Widmer_2005_Empa* in F. Ongondo, I.D. Williams and T.J. Cherrett 'How are WEEE doing? A global review of the management of electrical and electronic wastes' (2013) 31 *Waste Management* 414 at 722.

companies that had no organised take-back systems nor license provisions for sorting and dismantling WEEE.[120] Although South Africa has ratified the Basel Convention, and is yet to ratify the Bamako Convention, its e-waste management is currently subsumed and regulated under the general waste management law – the National Environmental Management: Waste Act 2008[121] (hereafter 'Waste Act 2008). The EPR principle is currently regulated by selected legislation, which has given government steadily increasing power to implement it.[122] For instance, section 59 of the Consumer Protection Act 2008 imposes responsibility on the producer, supplier, importer or distributor of any goods of which the disposal into a common waste collection system is prohibited by national legislation.[123] The Waste Act 2008 also directs the Minister of Environmental Affairs to establish a mandatory EPR programme, and set norms and standards for EPR, which may include voluntary schemes.[124] Currently, government has implemented the waste tyre programme managed by the Recycling Development Initiative of South Africa (REDISA) under the provisions of the Waste Tyre Regulations 2009.[125] South Africa has also successfully implemented voluntary producer take-back schemes. For instance, its most successful EPR programme – the Recycling Oil Saves the Environment (ROSE) Foundation's used lubricating oil recycling initiative;[126] voluntary take-back

[120] Ongondo, above (note 117) at 722.

[121] Act 59 of 2008.

[122] See the National Environmental Management Act 107 of 1998 (as amended by Act 62 of 2008), which states that 'responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its lifecycle.' See also the National Waste Management Strategy 1999, which mentions EPR, section 1 of the National Environmental Management: Waste Act 62 of 2008, which provides a definition of EPR and section 18 (1), which directs the Minister of Environmental Affairs to use his discretion to establish a mandatory EPR Programme. See Nahman, above (note 116) at 845.

[123] Section 59 (1) *(a)* & *(b)* of the Consumer Protection Act, No. 62 of 2008. Section 59 (2) also requires consumers to dispose of any supplied or imported goods at a collection facility in accordance with regulation/industry waste management plan.

[124]Section 18(1) and 7 (2) *(b)* of the Waste Act 2008.

[125] The Waste Tyre Regulations are a derivative of the Environment Conservation Act 1989.

[126] See Loretta Feris and Louise Du Toit 'Land Pollution' in J Glazewski *Environmental Law in South Africa* (2013, Service Issue 1) 21-39. See also ROSE Foundation website – available at *http://www.rosefoundation.org.za*, accessed on 2 November 2013.

implementation strategy of e-Waste Association of South Africa (eWASA);[127] the efforts of the South African e-Waste Alliance (SAEWA); and the efforts of two e-waste recycling companies in Gauteng, Johannesburg.

South Africa's mandatory and voluntary initiatives emphasise the ways in which voluntary industry initiatives and government regulations must work in synergy to ensure sustainable e-waste management in a jurisdiction such as Nigeria. Empirical research is conducted in South Africa, particularly with voluntary industry, to determine the extent to which social, environmental and economic elements influences these initiatives, and how these initiatives translate into regulatory mechanisms on e-waste. The South African case builds on existing literature on waste management, policy and administration, and presents empirical/field research carried out with the organisations/companies above. This thesis also replicates existing empirical research already carried out in South Africa, and elaborately analyses the political intricacies in voluntary industry regarding stakeholder representation by e-waste organisations in South Africa. The thesis also discusses South African regulatory mechanisms featuring advanced EPR framework conditions and current implementation by the manufacturers and importers in industry to e-waste management,[128] thus making it a worthy model for Nigeria.

1.7.2 E-waste in Nigeria

The World Bank describes Nigeria as a 'lower middle income' country;[129] it has one of the fastest-growing economies in the world.[130] Despite the fact that Nigeria is a

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[127] South Africa has received support through international development aid programmes (e.g. Swiss e-Waste Programme [because Switzerland is the first EU country to establish a comprehensive e-waste management system]) and the engagement of the international corporate headquarters of large enterprises (e.g. Hewlett Packard, Dell, Nokia). The Swiss developmental agency, EMPA, was instrumental in the start-up of the eWASA as a pilot project to test the viability of a producer responsibility organisation in South Africa. See Manomaivibool, above (note 110) at 67. See also UNEP 'Recycling – From E-Waste to Resources,' above (note 64) at 100, 103, 108.

[128] UNEP, above (note 64) at 103.

[129] The World Bank IBRD-IDA 'Nigeria,' available at *http://data.worldbank.org/country/nigeria,* accessed on 14 April 2015.

[130] The International Monetary Fund projected a rapid growth of 8.3% in the nation's economy in 2009 largely due to the booming technology sector. See Bogale, above (note 104) at 249.

Party to the Basel Convention and the Bamako Convention 1991, e-waste continues to flow into Nigeria.[131] Three-quarters of these imported products are unusable EEE that cannot be re-used, and are dumped in open dumpsites and incineration sites scattered around the city. Clouds of black smoke hang over Nigeria's dumps in Ikeja (Lagos State) as the stench of burning plastic fills the air, while young boys make their way through oily water to scavenge for any valuable components that are salvageable from the burnt EEE cables and wires.[132] They attempt to recover re-usable metals such as copper wire, which they sell to highly educated, well-trained but low-wage workers who repair and refurbish the used electronic equipment for re-sale at local markets.[133] The lack of awareness of the impacts of heavy metals on the health of these boys and low-wage workers, and on the environment in general, is a serious concern.

Currently, Nigeria provides for an e-waste specific legislation – the Electrical/Electronic Sector Regulation 2011, the provisions of which contain lofty ideals for e-waste management and the prohibition of e-waste imports. As shown in Chapter 5, while the legislation notes and adopts the EPR principle, its failure lies in the ineffectual implementation and enforcement of its provisions occasioned by lack of manpower in the National Environmental Standards and Regulations Enforcement Agency (NESREA), the inability to actualise the synergy that must exist between government and industry, the absence of collection/recycling facilities, and the absence of formal recyclers in the country. The thriving informal markets where e-waste fractions are dismantled and crudely recycled appear to disregard the provisions of the existing legislation, as the markets present a worthy outlet for the continued

[131] It is estimated that over 500 containers of 'second-hand' EEE are imported to Nigeria every month from Europe, with each container holding 500 computers. See Sonny Aragba-Akpore, 'Red Alert on Used Computers, Electronic Devices,' The Guardian (27 December 2005), available at *http://ban.org/ban_news/2005/051227_nigeria.html,* accessed on 5 November 2013.

[132] Matt Ford, Sifting through the Mounting Problem of E-Waste', CNN (2 August 2009), available at *http://www.cnn.com/2009/TECH/science/08/02/e-waste.recycling/,* accessed on 6 November 2013. See also Liz Carney, 'Nigeria Fears E-waste 'Toxic Legacy,' BBC News (19 December 2006), available at *http://news.bbc.co.uk/2/hi/africa/6193625.stm*, accessed on 31 August 2013.

[133] Christian Purefoy, 'Serious Contamination – Threat from Africa's Mounting E-Waste,' CNN (9 April 2009), available at *http://www.cnn.com/2009/WORLD/africa/04/08/africa.recycling.computers.ewaste/,* accessed on 12 August 2013.

importation of e-waste from developed countries into Nigeria. E-waste imports in Nigeria are monitored by the Nigerian Customs Service (NCS) and NESREA. Although both agencies' efforts are laudable, much still needs to be done by government to tackle the country's e-waste crisis. Amnesty International reports that Nigeria's oil wealth in the Niger Delta has led to a crisis of 'extensive pollution and damage to the environment, corporate failure and bad practice, serious government neglect and the actions of security forces and armed groups.'[134] These problems, coupled with Nigeria being named one of the world's most corrupt countries[135] provide insights into why the country is having a hard time tackling e-waste imports. Nigeria can learn from South Africa in ensuring sustainable e-waste management by placing a responsibility on producers and, where necessary, retailers and consumers, for the EOL management of e-waste.

1.8 Research questions

From the aforementioned, the following broad research question is formulated:

To what extent can the EPR principle be applied in achieving sustainable e-waste management in Nigeria?

The sub-questions that flow from this primary research question are:

1) *Should a producer of EEE be made to solely bear the responsibilities for e-waste recycling in any jurisdiction?*

2) *How effectively can mandatory e-waste legislation be implemented?*

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[134] Amnesty International, 'Nigeria: Petroleum, Pollution and Poverty in the Niger Delta' (June 2009) at 8, available at *https://www.es.amnesty.org/uploads/media/Vertidos_de_petroleo_de_la_empresa_Shell_en_el_Delta_del_Niger.pdf*, accessed on 07 November 2013. See also Christine Terada 'Recycling Electronic Wastes in Nigeria: Putting Environmental and Human Rights at Risk' (2011-2012) 10 *Nw. U. J. Int'l Hum. Rts* 154 at 170.

[135] Alexander E M Hess and M Sauter, 'The most corrupt countries in the world' *USA Today*, 14 July 2013, available at *http://www.usatoday.com/story/money/business/2013/07/14/most-corrupt-countries/2512785/,* accessed on 7 November 2013.

3) *What role does voluntary industry play in achieving sustainable e-waste management through the implementation of the EPR principle?*

4) *Can the EPR principle be extended to include product stewardship in order to ensure effective e-waste management in Nigeria?*

1.9 Objectives and hypotheses

In view of the general research questions and the use of South Africa as a case study in this thesis, the objectives are:

1. Determine whether the application of a 'strict' EPR approach, which places sole responsibility on a producer of EEE, is more realistic in a developing country context, rather than a 'mixed' EPR/product stewardship approach, which seeks to impose responsibility on other stakeholders in the EEE chain; and

2. Ascertain whether the dynamics of EPR implementation and enforcement can be applied in a jurisdiction such as Nigeria, where importation of new EEE, e-waste and SHEEE is the norm, rather than production of new EEE, especially when EPR requires the placement of responsibility on the producer of new EEE.

In underlying these objectives, this thesis hypothesises the following:

1. Pure EPR, which seeks to place legal, financial, physical and informative responsibility on the original equipment manufacturer (OEM)/producer is unrealistic in the context of a developing country such as Nigeria, as the EEE producer is just one entity in the EEE chain. Rather, the EPR principle must be extended via the product stewardship approach to include other actors in the EEE chain, in order that this responsibility may be shared and implemented accordingly through mandatory regulations and voluntary initiatives on EEE.

2. The evolution of international environmental waste treaties have multi-layered effects on national e-waste regimes. Although the original intent of the Basel and Bamako Conventions was to control the trade in hazardous waste between

developed and developing countries, its scope has been expanded to cover e-waste management and effective disposal options at the national level. Non-binding decisions and guideline documents adopted at the Conference of Parties (CoP) meetings of both treaties, which identified the need for sustainable e-waste management through the EPR principle, provide a path for governments and other stakeholders to amend existing e-waste legislation or adopt policy documents to guide the activities of such stakeholders.

3. In the management of e-waste at the domestic level, there is a strong, indivisible link between government-mandated e-waste policy, and that of voluntary industry; they cannot work separate from each other. Voluntary industry initiatives are more effective in practice than mandatory regulations, but it is necessary that voluntary initiatives be partnered with mandatory regulation on e-waste to achieve success in in any jurisdiction.

4. There appears to be a total detachment between the provisions in e-waste legislation in Nigeria and the actualisation of same at the institutional level. Consequently, it appears that there is a divergence between theory and practice in Nigeria's e-waste regime.

1.10 Research design of the thesis

In its most elementary sense, a research design is the logical sequence that connects empirical data to a study's initial research questions, and ultimately to its conclusions.[136] Nachmias and Nachmias describe a research design as a plan that 'guides the investigator in the process of collecting, analysing, and interpreting observations. It is a *logical method of proof* that allows the researcher to draw inferences concerning causal relations among the variables under investigation.'[137]

[136] Robert K Yin *Case Study Research Design and Methods* 4ed (2009) 26.

[137] D Nachmias and C Nachmias *Research Methods in the Social Sciences* (1992) 77-78.

The conceptual framework of this research is expounded through socio-legal theory and the use of qualitative rather than quantitative data.

1.10.1 The socio-legal approach

According to Tamanaha, 'the label "socio-legal studies" has gradually become a general term encompassing a group of disciplines that applies a social scientific perspective to the study of law.'[138] Banaker and Travers put forward the idea that certain areas of legislation, and not just non-doctrinal legal research and research education, are closely linked to the implementation of social policies and regulations, (e.g. welfare and administrative laws), and have been greatly influenced by socio-legal research.[139] Cownie also asserts that 'law is a discipline in transition, moving away from traditional doctrinal analysis towards a more contextual, interdisciplinary approach…'[140] In line with this trend, this thesis adopts a socio-legal approach in order to highlight the various ways in which the discourse on e-waste management for the past three decades have shifted from a command-and-control approach to a more sustainable cradle-to-cradle approach (as highlighted in Chapter 2).

While much of the research drawn on in this thesis derives from a legal perspective, the use of a socio-legal approach is more rooted in reality. The thesis analyses the legal regimes on e-waste in South Africa and Nigeria, and investigates the veracity of assumptions regarding voluntary initiatives and the complementary nature of same to mandatory regulation. In achieving this, qualitative investigation in the form of key informant interviews with stakeholders in the e-waste industry in South Africa was carried out. This qualitative investigation builds on existing waste regulations in South Africa described in Chapter 4. The use of the socio-legal method of investigation led to the identification of a three-tier voluntary model for effective e-waste management in South Africa and the scope of its application, with a view to applying

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[138] Brian Z. Tamanaha *Realistic Socio-Legal Theory – Pragmatism and a Social Theory of Law* (1997) 2.

[139] Reza Banakar and Max Travers (eds) *Theory and Method in Socio-Legal Research* (2005) Hart 9.

[140] F Cownie *Legal Academics: Culture and Identities* (2004) 197.

the same in Nigeria. No qualitative investigation was carried out in Nigeria, since there is a wealth of recent, existing investigation and informant interviews on e-waste imports in that jurisdiction, which are analysed in Chapter Five of this thesis. Further qualitative investigation by the researcher into e-waste trade in Nigeria would have amounted to a replication of existing information on the subject. Therefore, the focus of this thesis was on carrying out qualitative investigation in South Africa only, to provide more salient recommendations regarding the need for an integrated partnership between voluntary initiatives and mandatory regulations, in order to ensure effective e-waste management in Nigeria. These recommendations are also strengthened in the final chapter by virtue of data culled from observations during the interviews conducted.

1.10.2 The qualitative approach

Qualitative data can be defined as 'empirical information about the world, not in the form of numbers but in words.'[141] According to Denzin and Lincoln, qualitative research includes interviews, transcripts, recordings and notes, observational records and notes, documents and the products and records of material culture, audio visual material and personal experience materials (such as artefacts, journal and diary information and narratives).[142] Flick notes that 'qualitative methods take the researcher's communication with the field and its members as an explicit part of knowledge production instead of excluding it as far as possible as an intervening variable.'[143] This thesis utilises the investigations conducted in South Africa to produce more knowledge about e-waste in that jurisdiction.

The data used to analyse e-waste legal regimes in South Africa and Nigeria was derived from different sources.

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[141] Keith F Punch *Introduction to Social Research – Quantitative and Qualitative Approaches* 2ed (2005) 141.

[142] N K Denzin and Y S Lincoln (eds) (1994) *Handbook of Qualitative Research* cited in Keith F Punch *Introduction to Research Methods in Education* (2009) 87.

[143] Uwe Flick *An Introduction to Qualitative Research* (1998) 6.

i. Documentary data

This constituted the majority of information in this thesis and was helpful with triangulation of interviews and observation carried out in this research, in line with Denzin's findings.[144] Other data used in support of the qualitative investigation in South Africa and desk-based study of Nigeria included primary and secondary data, for instance case law and legislation relating to e-waste, and regulations on e-waste with the force of law in Nigeria.

ii. Media reports and publications

These include newspapers, magazines and commentaries and online papers and the publications of e-waste non-governmental organisations, which were collected between 2011 and 2015. Online data were obtained after using operative words such as e-waste and EPR in the applicable internet search engine.

iii. Qualitative interviews

These constituted a third source of data, since it 'explicate(s) the ways people in particular settings come to understand, account for, take action, and otherwise manage their day-to-day situations [in the waste industry in South Africa].'[145] Key informant interviewing refers to qualitative in-depth interviews and are used to gain access to insider understanding of a particular subject matter and the opinions of the interviewee or respondent about the same.[146] It usually involves a conversation between an interviewer and an informant. The researcher employed semi-structured interviews, which required the use of open-ended question and an interview guide to cover the scope of the interview. The researcher strictly applied Flick's approach to semi-structured interviews, taking care to ensure that the open-ended questions

[144] N K Denzin *The Research Act: A Theoretical Introduction to Sociological Methods* 3ed (1989) in Punch, above (note 140) 184.

[145] Punch, above (note 141) at 142.

[146] Bert Klandermans, Suzanne Staggenborg *Methods of Social Movement Research* at 105. See also *UCLA Center for Health Policy Research 'Section 4: Key Informant Interviews'* at 1, available at *http://healthpolicy.ucla.edu/programs/health-data/trainings/documents/tw_cba23.pdf,* accessed on 20 April 2015.

allowed room for specific, personal views of the interviewees without influencing them.[147] These interviews helped consolidate advocacy of the use of South Africa for comparative purposes.

Prior to obtaining qualitative data, the researcher made some assumptions relating to e-waste management in South Africa, without necessarily considering the political interplay which may exist in South Africa regarding e-waste management in industry and by government. An in-depth foray into existing South African waste law and policy set out in Chapter Four of this thesis also presents certain conclusions, which have been exposed by virtue of the qualitative data and interviews obtained, and which will also assist Nigeria in the adoption of a sustainable e-waste regime.

1.10.3 Research sites

The researcher carried out empirical research in Johannesburg, Gauteng, and in Cape Town. The field trips took place between August and September 2014.

The researcher also utilised purposive sampling in order to emphasise the success achieved by voluntary industry in the application of the EPR approach in South Africa. This approach involves the systematic selection of certain groups, individuals, situations or sites to study on the basis of their relevance to the central research issue.[148] Consequently, two voluntary e-waste recycling companies were selected, not only on their reputation and ratings as world-class electronic recyclers, but also on their ability to successfully promote sustainable social (employment), as well as economic and environmental incentives therefrom, in Cape Town and Johannesburg, respectively. The selection of Cape Town and Johannesburg is strategic because the main e-waste recycling companies are located therein. These companies are referred to as Company A and Company B.

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[147] Uwe Flick *Introducing Research Methodology: A Beginner's Guide to Doing a Research Project* 2ed (2011) 113. See generally Quinn Patton *Qualitative Evaluation Methods* (2002).
[148] Rebecca Reviere *Needs Assessment: A Creative and Practical Guide for Social Scientists* 2ed (2013) 57.

In a bid to emphasise the success of the EPR scheme in South Africa's waste industry in general, three organisations were also selected for the case studies – the ROSE Foundation (based in Cape Town), owing to its successful application of the EPR approach to the recycling and management of waste oils; the e-Waste Association of South Africa (e-WASA) and the South African e-Waste Alliance (SAEWA). Although the ROSE Foundation is not an e-waste recycling organisation, it was selected to emphasise the successful implementation of the EPR approach to waste oils in South Africa by a voluntary organisation. The latter two were selected owing to their roles as representatives of the e-waste industry in South Africa, to highlight the working relationships existing between government and industry. Their roles are significant because they act as PROs (discussed in Chapter 2), and are in constant negotiations with government to protect the interests of stakeholders in the waste industry in South Africa.

To understand the compliance and monitoring efforts of government regarding the implementation of e-waste regulation in South Africa, two governmental agencies in charge of environmental affairs and trade imports – the Department of Environmental Affairs (DEA) and the Department of Trade and Industry (DTI) were selected. The role of the Recycling Development Initiative of South Africa (REDISA) is also examined in the category of a governmental agency that is responsible for the management of waste tyre recycling in South Africa and implements the EPR approach expounded in existing waste tyre regulations.

The number of participants selected from each organisation was based on the following factors:

1. The participant's in-depth knowledge and first-hand experience in running an e-waste facility/waste organisation, and the application of sustainable incentives thereof:

2. The combination of industry-based data with regulatory based data. Accordingly, experience in the industry, and professional managerial staff of the abovementioned agencies involved in enforcement procedures guided my selection.

The participants included one sales manager, two CEOs and two coordinators.

1.10.4 Data collection through interviews and direct observation

Relevant data regarding e-waste recycling and the successful implementation of the EPR principle was obtained through the use of key informant interviews, and was supplemented by direct observation. Data realised from the interviews with the participants provides deep insights into the implementation of the sustainable EPR approach in South Africa, thus complementing the main desk-based part of the thesis. The number of participants interviewed, though limited, provided sufficient clarity for the hypotheses raised in the thesis.

All interviews were recorded and lasted between 60 and 90 minutes. Written prior informed consent was obtained from all the participants, and each participant was assured of confidentiality and anonymity. The audio tapes of the interviews were transcribed immediately into written notes and incorporated into the main body of this thesis, as will be shown in Chapter 5. Participants were also guaranteed that no potential harm would come to them as a result of their participation. Before each interview, it was reiterated that the interviews will not be carried out to create uncertainties about the waste industry; rather, it would serve to create increased awareness on how e-waste can be successfully managed in Nigeria using the EPR approach.

Direct observation provided an added source of data for this research. Direct observation, which also means participant observation, provides an opportunity for a researcher to observe directly what is happening at a site.[149] It also 'gives the researcher direct experience of the phenomena being studied and creates an opportunity to see and hear what is happening in a social setting rather than focusing solely on narrative descriptions of participants.'[150] This method was utilised during the researcher's visit

[149]Bernadette Pauly 'Direct Observation' in Albert J. Mills, Gabrielle Durepos and Eiden Wiebe *Encyclopedia of Case Study Research,'* available at *http://srmo.sagepub.com/view/encyc-of-case-study-research/n114.xml*, accessed on 21 April 2015.

[150] Ibid.

to one of the e-waste recycling companies. This particular company granted consent to interview one senior staff member, and offered the researcher the opportunity to carry out direct observation of their facilities. These same opportunities were not granted by the second e-waste recycling company, and so most information regarding this is gleaned from documentary data obtained online, which incorporates previous interviews and site visits carried out previously at the company. The notes taken during the direct observation also provided first-hand knowledge, information and direct proof of the actual physical and mechanical processes involved in e-waste recycling, which is incorporated into Chapter 4.

1.11 Ethical considerations

The empirical component of this research was carried out with the approval of the Ethics Committee, Faculty of Law, University of Cape Town, and in compliance with the University of Cape Town's Ethics Policy. The participants were assured that information provided by them would be presented in a confidential manner in the thesis.

1.12 Challenges experienced

The researcher experienced little or no challenges, but received little, if any cooperation from the national offices of the DTI and the DEA. The researcher communicated with staff from both departments and sought to set up Skype and physical meetings via emails and telephone calls. Upon a lack of any response, the researcher also forwarded the interview guide questions to DEA staff to facilitate future Skype or physical meetings. As at the time of submission, the researcher had received no further communication from DEA staff, despite repeated phone calls to the DEA Office at Pretoria and unfulfilled promises from the official in charge to revert back to the researcher

Interviews with staff and senior personnel of both departments is important to this research in order to determine how the monitoring and compliance requirements set out under the Waste Act 2008 and the National Waste Management Strategy 2011

concerning e-waste are being enforced. Information gleaned from these personnel would have provided further salient recommendations to Nigeria concerning compliance and enforcement of e-waste regulation. As a result, the researcher relied on journal articles regarding e-waste management in South Africa, and the interviews with selected participants to provide assessment of the effectiveness of both departments in the management of e-waste.

1.13 Value of the findings and significance of the research

Based on the findings of this research discussed above, the contributions of this thesis, specifically for Nigeria, and in the context of Africa generally, the researcher set out the contributions of this research:

a. This thesis contributes to existing literature on EPR models by critically appraising the advantages and disadvantages of same in the South African and Nigerian context. Accordingly, it presents a realistic overview of the complexities envisaged in achieving sustainable e-waste management in an African context.

b. The thesis emphasises the need for reforms proposed by international waste treaties and their CoPs discussed in Chapter 3, and proposes a restructuring of the national e-waste framework in Nigeria to reflect the recommendations proposed in the Guideline documents under the Basel Convention.

c. In Chapter 5, it is noted that an institutional framework for the actualisation of the EPR approach is absent. The theories established in Chapter 4 for South Africa presents an ideal blueprint for Nigeria to set up institutions to achieve the objectives of e-waste legislation.

d. The researcher examined South African waste legislation and provisions, because existing law and policy on e-waste in Nigeria is deficient. This assertion is based on the fact that existing law and policy on e-waste are not periodically reviewed, compared to South Africa's legislation, which is

reviewed every three years. The thesis contributes to policy reform in Nigeria and the recommendations set out above are crucial for Nigeria, and may also find expression in other countries in sub-Saharan Africa that are likely struggling with volumes of used EEE imports and management of e-waste – like Nigeria.

It is expected that the specific selection of South Africa as a model for Nigeria in this thesis provides more clarity and additional knowledge for e-waste management from a developing country perspective, as a step towards resolving the global e-waste crisis.

1.14 Limitations of findings in this thesis

Discourse on e-waste is multidimensional, particularly because discourse on EEE management also require a foray into the management of specific e-waste fractions such as batteries, CRTs, fluorescent, PWBs, etc. In this thesis, the researcher focuses not on the management of a specific e-waste type, but on the need to apply a sustainable approach to general e-waste management using the EPR principle. Once this approach is implemented and enforced in any jurisdiction, it can also be applied to specific e-waste fractions if need be.

The researcher's empirical research and ensuing data was collated from a site visit to Company A. However, e-waste data from Company B was restricted to documentary analysis of empirical research conducted at Company B in 2005. Company B's refusal to grant consent to the researcher to carry out empirical research within the company's site compelled the researcher to rely on 10 year old research data realised therefrom. The researcher could not exclude the documentary e-waste data regarding Company B from this thesis as it still remains one of the foremost e-waste recycling companies in South Africa till date. Hence, direct observation of only one e-waste company constituted an important limitation to this research.

The lack of response from the DEA and DTI also constituted a limitation to the findings realised in this thesis. The researcher's inability to obtain consent from both departments affected the strength of the recommendations for Nigeria in this thesis,

regarding compliance and enforcement mechanisms to be employed to ensure effective and sustainable e-waste management in Nigeria.

The scope of this thesis is limited to a consideration of the reasons for the trade in electronic waste into Nigeria, the application and advocacy of the EPR approach as one of the most effective tools to ensure effective e-waste management, the mandatory and voluntary methods of application of EPR in any jurisdiction, the roles of international waste treaties and their influences on national e-waste frameworks, the influences of such treaties, the realistic application of mandatory and voluntary EPR methods in South Africa, and a consideration of what pertains in Nigeria, using the South African model as the unit of analysis. It also expatiates on the EPR principle to include the producer stewardship concept where EPR cannot be realistically applied in a developing country situation. This thesis does not provide a 'one-size-fits-all' approach to e-waste management in Nigeria, bearing in mind that there are other existing environmental policy tools that can be applied to e-waste management in general. In writing this thesis, the researcher relied mostly on journal articles and internet sources, since existing literature on e-waste and EPR is still emerging.

1.15 Overview of the chapters

Chapter 2 presents the literature and an analytical overview of the concept of EPR embedded in sustainable development, which flows from the PPP. It highlights the uniqueness of the concept of EPR, which incorporates economic, environmental and social considerations, in line with the principle of sustainable development. The chapter underscores the importance of the EPR matrix, i.e. the ambit of legal, economic, physical and informative responsibility for management of EEE that is borne by a producer. It also investigates the realistic implementation of the EPR matrix on an importer rather than a producer in a developing country context. This EPR matrix informs the analysis of realistic implementation in South Africa and Nigeria in ensuing chapters. This chapter also identifies the PS approach to EEE management, hypothesising that a mix of the EPR/PS approach to e-waste management in a developing country seems more realistic than a pure EPR approach. The chapter further identifies mandatory regulations and voluntary approaches as the means through which the EPR principle can be actualised in any jurisdiction, and expounds

on the different forms a voluntary approach may take. It also emphasises the importance of PROs, which may be central to the effectiveness of e-waste management in a developing country such as Nigeria.

Chapter 3 discusses the international and regional regulation of e-waste, with emphasis on the Basel Convention 1989, the Bamako Convention 1991 and other international initiatives geared towards e-waste management, with a view to determining the extent to which these frameworks have been internalised in Nigerian and South African e-waste legislation. It describes the political intricacies of the Basel and Bamako Conventions in particular, from the original adoption of both treaties to date, highlighting e-waste policy documents which have been produced from several CoP meetings, and which have a direct influence on e-waste management in Nigeria.

Chapter 4 discusses the effectiveness of domestic legislation and policy on e-waste in South Africa, highlighting the adoption of a sustainable EPR-based approach in them. It begins with an analysis of policy documents on EPR and their application to e-waste in South Africa, and emphasises the ways in which the EPR approach to e-waste has been incorporated in mandatory regulations on e-waste to that effect. The role of voluntary industry in e-waste is highlighted through empirical research conducted and a descriptive analysis of the interviews with respondents lends credence to the hypothesis identified in Chapter 1. The chapter concludes by elaborating on the findings garnered from the informal interviews carried out in the industry to show the influence these initiatives have on regulatory e-waste mechanisms. This elaboration is effected under the various forms of voluntary approaches identified in Chapter 2: the voluntary-to mandatory approach, formal-voluntary approach and the informal-voluntary approach.

Chapter 5 examines policies and regulations on e-waste in Nigeria, with a view to highlighting the extent to which e-waste management has found expression in that jurisdiction since the Koko Toxic Dump in 1988. It sheds light on the salient loopholes inherent in the regulatory framework on e-waste in Nigeria, and discusses the factors that are inimical to the implementation of the EPR principle in that jurisdiction. It also

identifies the effectiveness of the informal-voluntary approach to e-waste in Nigeria through informal e-waste markets.

Chapter 6 sets out the findings of the thesis based on the above chapters, cementing the theory that a mixed EPR/PS approach will be realistically applied in Nigeria. It provides insights into the lapses inherent in e-waste management in the Nigerian regulatory framework in comparison to the South African model. The chapter proffers recommendations for Nigeria on the basis of the EPR matrix and concludes the thesis.

Conclusion

In summary, the overall argument in this thesis is that the EPR approach, which can be expanded from the PS approach, provides one of the best ways in which sustainable e-waste management can be achieved. It exposes the typicality of developing countries (with Nigeria as an example) of adopting legislation without putting the necessary institutions in place to implement the attendant legislation. The thesis presents the South African model as evidence that sustainable e-waste legislation, with the attendant support institutions in place, is possible. It advocates the necessity of voluntary initiatives, as they are indicative of a more goal-oriented approach towards effective e-waste management. The thesis also highlights the fact that synergy must exist between voluntary industry and government regulation on e-waste if there is to be any achievement of sustainable e-waste management in any jurisdiction.

CHAPTER 2:

A SUSTAINABLE APPROACH TO E-WASTE MANAGEMENT THROUGH THE CONCEPT OF EXTENDED PRODUCER RESPONSIBILITY

Introduction

Sustainable development is a theoretical construct.[1] It recognises that human society is intrinsically related to a wider ecological process and the earth's natural resources.[2] As an ethical principle, it incorporates a commitment to equity between the current generation and those to follow, and between the poor and the more affluent.[3] On the other hand, while advocating the need for economic and social development, there is also a growing recognition that efficient management of environmental resources is critical,[4] to ensure that a harmonious balance between the three exists. Therefore, sustainable development is a realisation that environmental issues cannot be considered in isolation from other global concerns.[5]

The past 26 years have witnessed the emergence of sustainable development as an important concept in global efforts to balance economic, social and environmental policies and law. The popularity of the concept in policy also stems from the fact that it is becoming not just a legal principle, but a reflection of a combination of principles in an area that can only be referred to as 'the law of sustainable development.'[6]

Sustainable development involves a process of deep and profound change in the political, social, economic, institutional and technological orders, including a re-definition

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[1] Stephen A Roosa *Sustainable Development Handbook* 2ed (2010) 2.

[2] Duncan French *International Law and Policy of Sustainable Development* (2005) 10.

[3] 'The Role of Government and Policy in Sustainable Development – Introductory Note by Mr. Richard Ballhorn' (2005) 1 *McGill Int'l J. Sust. Dev. L. & Pol'y* 19.

[4] R Kerry Turner (ed.) *Sustainable Environmental Economics and Management – Principles and Practice* (1993) 319.

[5] Ibid.

[6] Mars Campins-Ertija and Joyeeta Gupta 'The Role of "Sustainability Labelling" in the International Law of Sustainable Development' in Nico Shrijver and Friedl Weiss (eds.) *International Law and Sustainable Development – Principles and Practice* (2004) 251.

of the relationships between developing and more developed countries.[7] The problem of the e-waste trade is exacerbated by the fact that used electronics generated in a particular (developed) country may be managed in another (developing) country.[8] This attempt to re-assemble and re-use such second-hand EEE by unskilled persons in a developing Nigeria who have no idea of the environmental and health impacts associated with the handling of such EEE is an important concern. Therefore, the management of the trade in electronic waste to developing countries constitutes one of those current problems which requires a 'change in the political,'[9] social, economic, institutional and technological order of a developing Nigeria. This is so because the government's focus is on other pressing issues such as revenue generation through its oil and gas sector, and security issues, thus placing the trade in electronic waste on the back burner.

This chapter provides an overview of the concept of sustainable development, which is embedded in the EPR principle. The impact of e-waste discussed in Chapter 1 reveals the need to apply an environmentally sustainable approach to e-waste management, particularly in the jurisdictions of developing countries. This Chapter, therefore analyses the EPR principle in context, providing a working definition of the entities *producer* and *importer* in order to determine the realities of implementation in a developing country context.

2. Background to sustainable development

2.1 Defining sustainability

The earliest expression of *sustainability* emerged as far back as the 1950s in the field of fisheries. This was the concept of maximum sustainable yield, which began to emerge as the major objective of fisheries conservation and was included in some early post-war fisheries conventions.[10] The term sustainability in its most elementary form

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[7] Maurice Strong 'Required Global Changes: Close Linkages between Environment and Development,' in Uner Kirdar (ed.), *Change: Threat or Opportunity* (1992).

[8] Ramzy Kahhat 'Electronic Waste – Environment and Society' in Klaus Hieronymi et al. (eds.), *E-Waste Management: From Waste to Resource'* (2013) 6.

[9] Strong, above (note 7) at 11.

[10] For example, the International Convention for the Northwest Atlantic Fisheries (Washington, 8 February 1949, which came into force on 3 July 1950), which indicated that the appropriate objective of fisheries conservation was to keep fish stocks 'at a level permitting the maximum *sustained* catch;' and the

reflects pure necessity; the basic rule of human existence being the ability to sustain the conditions life depends on (air, water, food, soil) for survival.[11] To this end, sustainability refers to the capacity of human systems to provide for the full range of human concerns in the long term.[12] In relation to society as a whole, sustainability recognises that 'a truly sustainable society will require a profound change in mind-set and a re-orientation of the values of… national culture.'[13]

As an ideal, sustainability has gained a status comparable to that of democracy, freedom and justice; it is universally desired, differently understood and complex in scope, extremely difficult to establish and impossible to dispense with.[14] Sustainability can be said to encompass resources, management policies, energy, social concerns, planning, economics, environmental impacts, construction practices, and many more. Responding to the sustainability imperative has caused institutions to rethink basic processes, with the potential of yielding fresh and creative solutions to current problems.[15] Even so, Voigt emphasizes that:

> There is no master plan for sustainability. In fact, humanity might forever strive for it. Like a state of justice, a state of sustainability may never be fully achieved, but this is by no means a reason for not trying.[16]

Convention for the establishment of an Inter-American Tropical Tuna Commission (Washington, 31 May 1949, which came into force on 3 March 1950), endorsed the objective of 'maximum sustained catches year after year.' See Nico Schrijver *The Evolution of Sustainable Development in International Law: Inception, Meaning and Status* (2008) 38-39.

[11] Klaus Bosselman *The Principle of Sustainability – Transforming Law and Governance* (2008) 9.

[12] Jenny Goldie *et al., In Search of Sustainability* (2005) 3.

[13] Ibid.

[14] W M Lafferty, 'From Environmental Protection to Sustainable Development: the Challenge of Decoupling through Sectoral Integration' in W. M. Lafferty (ed.) *Governance for Sustainable Development: the Challenge of Adopting Form to Function* (2004) 192.

[15] French, above (note 2).

[16] Christina Voigt *Sustainable Development as a Principle of International Law – Resolving Conflicts between Climate Measures and WTO Law* in David Freestone (ed.) *Legal Aspects of Sustainable Development* (2009) Vol. 2, 4.

Flowing from this, the thesis defines sustainable management generally as 'the maintenance of a resource management strategy which facilitate the actualisation of an environmental practice that is capable of positively evolving over time, without causing harm to the environment or human health.' In view of this, the concept of sustainable development is examined below.

2.2 What is sustainable development?

The World Commission on Environment and Development (WCED) 1987 – (referred to as the Brundtland Report) popularised the concept of sustainable development in international discourse.[17] The WCED, informally known as the Brundtland Commission, first met in 1984. Over the course of 900 days, which included the infamous Chernobyl explosion[18] and a host of other human-made environmental disasters, it explored the areas which it was created to ameliorate. Abiding by its mandate, the WCED released its influential report *Our Common Future* (also referred to as the Brundtland Report),[19] providing the first detailed UN elaboration on sustainable development.[20]

The Brundtland Report defines sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'[21] It recognised that although there are concerns about the impacts of economic growth on the environment, we should concern ourselves with the impacts

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[17] Marie-Claire Cordonier Segger and Ashfaq Khalfan *Sustainable Development Law – Principles, Practices and Prospects* (2004) at 18.

[18] Between 1984 and 1987, when the WCED presented its report, various environmental disasters had occurred across the globe. For example, in 1984, a leak from a pesticides factory in Bhopal, India killed more than 2,000 people and blinded and injured more than 200,000 more. Also, in 1986, the Chernobyl nuclear reactor explosion sent nuclear fallout across Europe, increasing the risks of future human cancers; and the drought-triggered, environment-development crisis in Africa peaked, putting 36m people at risk, killing perhaps a million. See Report of the World Commission on Environment and Development, *Our Common Future* United Nations (1987) at 17, available at *http://conspect.nl/pdf/Our_Common_Future-Brundtland_Report_1987.pdf,* accessed on 18 June 2013.

[19] Ved P Nanda 'Sustainable Development, International Trade and the Doha Agenda for Development' (2005*) 8 Chap. L. Rev*. 53 at 55.

[20] Ellie Carroll 'Twenty Five Years in the Making: Why Sustainable Development has Eluded the U. N. and How Community-Driven Development Offers the Solution' (2009-2010) *32 Hous. J. Int'l L*. 545 at 551.

[21] *Our Common Future*, above (note 18) at 37.

of ecological stress. The Report further acknowledges that ecology and economy are becoming even more interwoven – locally, regionally, nationally and globally – into a seamless net of causes and effects.[22] Emphasising that the environment and development are not separate challenges, the Report states that they are 'inexorably linked.'[23] Development cannot subsist upon a deteriorating environmental resource base; the environment cannot be protected when growth does not account for the costs of environmental destruction. These problems cannot be treated separately by fragmented institutions and policies. They are interlinked in a complex system of cause and effect.[24]

Sustainable development discourse also focuses on the importance of growth and development with the characteristic of permanence.[25] To pursue growth without first assessing whether the same goal can be achieved at a lower environmental cost is irrational.[26] Ensuring sustainability requires efforts to reduce uncertainty by setting out various institutional and environmental policies and mechanisms that will ensure effective application of these principles over the long term.[27] This is sustainable management.

Concerning economic growth, sustainable development recognises that the mainspring of economic growth is new technology, and that while this technology offers the potential for slowing the dangerously rapid consumption of finite resources, it also entails high risks, including new forms of pollution and the introduction to the planet of new variations of life forms that could change evolutionary pathways.[28] It further reiterates that the promotion of sustainable development requires an 'organised effort' for the diffusion of environmentally sound technologies for pollution control.[29] Concerning

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[22] Ibid at 13.

[23] *Our Common Future,* above (note 18), para 40 at 32.

[24] Ibid at 32.

[25] Turner, above (note 4) at 90.

[26] Ibid at 90-91.

[27] Ibid.

[28] *Our Common Future,* above (note 18), para. 14 at 13.

[29] Ibid, para. 64 at 65.

the e-waste trade, it is interesting to note that the Report, already in 1987, recognised the possibility of risk and environmental problems that technology would cause for the environment.

Nevertheless, the Brundtland Report stated clearly that sustainable development is not a fixed state of harmony, but a *process of change* in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs.[30] Arguably, this statement gives credence to the fact that the Report introduced the concept of sustainable development as a broad global policy objective.[31] Several factors combine to buttress the accuracy of this assertion. First, the Report offered a way to reconcile what had hitherto appeared to be conflicting societal goals. Second, it came at a time when the problem of environmental deterioration, especially of pollution, was high on the political agenda. Third, it supported developing countries in their pursuits of the goals of economic and social improvement.[32]

It must be noted that the adoption of other notable instruments popularised certain principles of international law that are profoundly relevant to the management of e-waste generally,[33] particularly the PPP, the principle of public participation and access to

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[30] *Our Common Future,* above (note 18) at 15.

[31] See P Behr, 'Environmental Issues Emerge as Key to Trade Pact on Hill,' *Washington Post* (Mar. 17, 1993) A14 and K Tumulty, 'Free-Trade Talks Raise Questions that Alarm Environmentalists,' *Los Angeles Times* (17 November 1991) at 19. See also Marie-Claire Cordonier Segger, Ashaq Khalfan and Salim Nakjavani, *Weaving the Rules for Our Common Future: Principles, Practices and Prospects for International Sustainable Development Law* (2002) 15.

[32] Susan Baker *Sustainable Development* (2006) 24.

[33] See the Stockholm Declaration 1972, the Rio Declaration 1992, Agenda 21 and the Johannesburg Plan of Implementation 2002. It must be noted that Agenda 21, a blueprint for a clean-up of the environment and for the attainment of sustainable development within the global village, in section II sets out guidelines and action points to be utilised by governments in developed and developing countries for the management of general hazardous waste, while section IV sets out the means of implementation of these guidelines.[33] See Eli Louka *International Environmental Law – Fairness, Effectiveness and World Order* (2006) 35; Ranee K L Panjabi, 'The Earth Summit at Rio – Politics, economics and the Environment' (1997) 128 in Brian C Athey 'Symposium 2002: Rio +10: Preparing for the Earth's Environmental Future Today' (2002-2003) 27 *Wm. & Mary Envtl. L. & Pol'y Rev.* 1; Rajendra Ramlogan *Sustainable Development: Towards a Judicial Interpretation'* (2011) Vol. 9, 21.

information, and the principle of integration.[34] However, of all these, the principle of integration constitutes an integral part of this thesis, since it highlights the interdependency of social, environmental and economic objectives.

The principle of integration of social, economic and environmental objectives is advocated as 'the most important and the most legalistic' of all the principles of international law relating to sustainable development,[35] because it seeks a deep integration between economic and social objectives (law) and policy, and environmental objectives (law) and policy.[36] It should not necessarily be seen simplistically, as a neutral phenomenon, but as a much more complex process.[37] In fact, on the basis that sustainable development tells us as much about the tensions in international society as it does about expressions of community, attempts at integration might better be seen as a form of multilateral dialogue in which the intrinsic conflicts of sustainable development can be played out.[38] Therefore, integration becomes 'the instrument through which the international community fashions a broad, often uneasy, consensus around the implementation of sustainable development, as it has had to do, on so many issues, so many times before.'[39]

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[34] The International Law Association Committee on the Legal Aspects of Sustainable Development released the 2002 New Delhi Declaration on the Principles of International Law Related to Sustainable Development, which identifies seven main principles of sustainable development. They include: States' duty to ensure sustainable use of their natural resources; the principle of equity and eradication of poverty; the principle of common but differentiated responsibilities; the precautionary approach to human health, natural resources and ecosystems; the principle of public participation, access to information and justice; the principle of good governance; and the principle of integration and interrelationship, particularly human rights and social, economic and environmental objectives. See ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development, 2 April 2002 in *International Environmental Agreements: Politics, Law and Economics* (2002) 211.

[35] Phillippe Sands *Principles of International Environmental Law* (2003) 263.

[36] This is also because its formal application requires the collection and dissemination of environmental information, and the conduct of environmental impact assessments. See P Sands, ibid. See also Segger and Khalfan, above (note 17) at 106.

[37] See 2nd Report of the International Law Association Committee on International Law on Sustainable Development. Toronto Conference 2006 at 4, available at *http://www.ila-hq.org/en/committees/index.cfm/cid/1017,* accessed on 3 July 2012.

[38] Ibid.

[39] Ibid.

The United Nations Conference on Environment and Development (UNCED) 1992 sought political endorsement of sustainable development as an international objective,[40] producing the Rio Declaration[41] and Agenda 21.[42] Perhaps, the most revolutionary aspect of the Rio Declaration is that it makes a state's management of its own domestic environment and resources a matter of international concern, for the first time, in a systematic way.[43] It significantly extends the domestic reach of international environmental law by requiring states to, among others, enact effective environmental legislation.[44]

In the same way, the uniqueness of Agenda 21 lies in its recognition of the fact that a new global partnership is required urgently in order to meet the challenges of environment and development. It commits states to engage in 'constructive dialogue' with each other in order to achieve a more efficient and equitable world economy,[45] bearing in mind that achieving increasing interdependence of the community of nations should be a

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[40] French, above (note 2) at 18.

[41] United Nations Conference on Environment and Development: Rio Declaration on Environment and Development 31 I. L. M. 814 (1992). The Rio Declaration refers to a set of 27 principles that currently constitutes the most significant universally endorsed statement of general rights and obligations of states affecting the environment. See P Birnie & A Boyle, *International Law and the Environment* 2ed (2002) 82.

[42] It should be noted that UNCED led to five texts. Two conventions, drafted and adopted prior to the Conference, were opened for signature at Rio; the United Nations Framework Convention on Climate Change, and the Convention on Biological Diversity. The conference also adopted a Declaration on Environment and Development (the *Rio Declaration*), the Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests (the *Forest Principles*)[42] and a plan of action entitled Agenda 21. See Alexandre Kiss and Dinah Shelton *International Environmental Law (*2004) Transnational Publishers, U.S., at 33. See also French above (note 2) at 18.

[43] Birnie and Boyle, above (note 41) at 85.

[44] Principle 11 of the Rio Declaration 1992.

[45] Agenda 21 recognised the North-South implications of attaining sustainable development and sought to extract a commitment of assistance for developing countries in their pursuit of sustainable development. It emphasised that the developmental process would not gather momentum if developing countries were weighed down by external indebtedness; developmental finance was inadequate; barriers restricted access to markets; or commodity prices and the terms of trade of developing countries remained depressed. See Rajendra Ramlogan, above (note 33) at 21.

priority of the international community.[46] It also emphasises ways in which national legislation can be a tool for achieving effective sustainable development.[47] Post-Rio, and more than two decades later, sustainable development has not only gained global recognition, it has also permeated the social, economic and environmental consciousness of various countries. Governments have now passed legislation that cut across all sectors of society and that incorporate the principles of sustainable development. They now recognise that applying sustainability principles to environmental management can yield more effective results for their citizens' well-being.

Therefore, while sustainability remains an *ideal*,[48] sustainable development has been accepted by the international community as a guiding concept, 'the golden rule of our civilisation in the 21st century.'[49] In this sense, sustainable development has been described as 'the *means* to the *end* of sustainability or the journey towards the elusive goal of sustainability.'[50] Segger and Weeramantry further re-iterate that, as an idea – an abstract creation of the human mind – sustainable development is based on the shared values, morals and ethics of an increasingly interconnected and interdependent world.[51]

Still, sustainable development has been widely criticised.[52] Durante notes that 'the discourse of sustainable development adds further legitimacy to the paradoxical notion

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[46] *Agenda Item 21*, UN Doc A/Conf.151/26 (1992), at 4, available at *http://www.sustainabledevelopment.un.org/content/documents/Agenda21.pdf* accessed on 12 June 2013.

[47] Chapter 8 [8.18] of Agenda 21 at 68.

[48] Emphasis mine.

[49] M Decleris, *The Law of Sustainable Development: General Principles: Report Produced for the European Commission* (2000) 48.

[50] New Zealand Parliamentary Commissioner for the Environment, *Creating Our Future: Sustainable Development for New Zealand* (2002) Office of the Parliamentary Commissioner for the Environment: Wellington at 29 in Voigt, above (note 16) at 4.

[51] M C Cordonnier-Segger and C G Weeramantry, 'Introduction to Sustainable Justice: Implementing International Sustainable Development' in M C Cordonnier-Segger and C G Weeramantry (eds.) *Sustainable Justice, Reconciling Economic, Social and Environmental Law* (2005) 1.

[52] French considers the concept to be problematic owing to the various theories and methods associated with the express inclusion of an intergenerational element within the Brundtland definition ('without compromising the ability of future generations to meet their own needs'). Birnie and Boyle also opine that this need to justify present behaviour by reference to the unborn is problematic if used in any way other than rhetorically. They argue that viewing intergenerational equity as an element of sustainable development

that environmental protection can be addressed through economic growth.'[53] However, others note that international processes are not often meant to directly impose a particular developmental path.[54] They observe that sustainable development can seldom provide a universal solution; it mainly serves to curb worse excesses.[55] In addition, given that developing countries have different developmental challenges and needs, it would be impossible to make a catch-all prescription.[56] Interestingly, the Brundtland Commission states:

> ...we are not forecasting a future; we are serving a notice – an urgent notice based on the latest and best scientific evidence – that the time has come to take the decisions needed to secure the resources to sustain this and coming generations. We do not offer a detailed blueprint for action, but instead a pathway by which the peoples of the world may enlarge their spheres of cooperation.[57]

This thesis disagrees with the notion that international processes, of which sustainable development is one, is an 'imposition' of a developmental path. Rather, it can be seen as a necessary guide for states to consider the need for a more holistic approach to economic, social and environmental development. Presently, it may not provide a *universal solution*, but it is the anchor from which other relational subjects flow, and it can assist governments in the effective management of their economies and the environment. Here, the thesis advocates the recognition of sustainable development as a fundamental pathway to sustainable e-waste management. As stated in Chapter 1, this thesis uses South Africa as the

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does not resolve the argument for stronger generational rights or international guardianship, nor does it determine the optimal balance between this generation and its successors. French, above (note 2) at 17; Birnie and Boyle, above (note 40) at 91.

[53] See F de Piva Durante, 'Environment and Development Debate: Paradoxes, Polemics and Panaceas,' 8 *Griffith Law Review* (1998) 258, in S. Ataputtu, 'Sustainable Development, Myth or Reality? A Survey of Sustainable Development under International Law and Sri Lankan Law,' (2001) 14 *Georgetown International Environmental Law Review* 279. See also Duncan French, ibid at 17.

[54] Segger and Khalfan, above (note 17) at 19.

[55] Segger and Khalfan, ibid at 19.

[56] Ibid.

[57] *Our Common Future,* above (note 18) at 11.

model of analysis because it corroborates the notion that sustainable development has permeated the consciousness of national governments and sustainability principles have been applied to its national legislation – particularly in its legislation on waste. Redclift notes that before one can embark on a cross-cultural exercise in environmental policy, one must consider the links between environmental knowledge and power,[58] particularly in developing countries. South Africa has demonstrated its ability to understand and tackle issues of environmental knowledge and dissemination of information on the need for a sustainable approach to be applied in all areas of environmental management.[59] Its approach to e-waste management therefore provides a blueprint for a developing Nigeria, whose implemental approach to EEE management is still in its infancy.

'Finding the right balance of environmental, social and economic conditions to foster sustainable development is no easy task.'[60] However, it is imperative that some measure of balance between these three objectives be sought immediately in order to apply it to e-waste management. This means that in attempting to tackle the e-waste crisis, these three objectives must be included in any legislation on e-waste in any jurisdiction. For a clear understanding of the economic, social and environmental benefits of successfully regulating e-waste, an analysis of the concept of EPRis expounded on in this Chapter. This is in line with the hypothesis of this research that the sustainable regulation of e-waste, incorporating economic, social and environmental considerations, can be achieved via the goal-oriented approach of EPR.

2. 3 Extended producer responsibility – a principle of many parts

Sustainable development is strongly encapsulated in the EPR principle owing to the social, economic and environmental incentives that the principle promotes. The origins of EPR

[58] Michael Redclift 'Environmental Economics, Policy Consensus and Political Empowerment' in Turner, above (note 2) at 118.

[59] National Environmental Management Act 107 of 1998 (amended by Act 62 of 2008).

[60] Voigt, above (note 16) at 5.

can be traced back to a report submitted to the Swedish Ministry of Environment in 1990 by Lindhqvist and Lidgren.[61] Lindhqvist aptly defines the concept as:

> an environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product, by making the manufacturer of the product responsible for the entire life-cycle of the product and especially for the take-back, recycling and final disposal of the product. The Extended Producer Responsibility is implemented through administrative, economic and informative instruments. The composition of these instruments determines the precise form of the Extended Producer Responsibility.[62]

EPR has been generally described as a pollution prevention policy, a cradle-to-cradle approach[63] that focuses on product systems rather than production facilities. The responsibility for the product is broadened beyond the emissions and effluents generated by the extraction or manufacturing processes in the management of the product once it is discarded. [64] Therefore, the EPR policy is based on the PPP.

The PPP as a principle of law relating to sustainable development implies that the polluter should bear the expenses of carrying out pollution prevention measures or paying for damages caused by pollution. Instituting the PPP ensures that the prices of goods reflect the costs of producing that good, including costs associated with pollution, resource

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[61] Thomas Lindhqvist and Karl Lisdgren, (1990) 'Modellerförförlängtproducentansvar [Models for Extended Producer Responsibility] In Ministry of the Environment, Frånvaggan till graven – sex studier avvarorsmiljöpåverkan [From the Cradle to the Grave – six studies of the environmental impact of products]' (Ds 1991:9) in Thomas Lindhqvist, 'Extended Producer Responsibility in Cleaner Production – Policy Principle to Promote Environmental Improvement of Product Systems' May 2000, Doctoral thesis at fn.1, p. ii, available at *http://www.lub.lu.se/luft/diss/tec355.pd*f, accessed on 4 November 2013. See also INSEAD Faculty & Research Working Paper *Individual Producer Responsibility: A Review of Practical Approaches to Implementing Individual Producer Responsibility for the WEEE Directive* (2010) at 10, available at *http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1698695,* accessed on 19 October 2013.

[62]Lindhqvist Thesis, above (note 60) at 8.

[63] A cradle-to-cradle approach in the assessment of a product is one which takes into account a product's entire life-cycle. It differs from a cradle-to-grave approach, which takes into account the current system/usage of a product and after such usage, its life-cycle comes to an end and it is either disposed in a landfill or another waste disposal site. See Community Recycling Network 'Two Approaches to Product Lifecycle' Autumn Newsletter, March 2012, available at *http://communityrecyclers.org.nz/assets/CRN-March-2012-Newsletter.pdf*, accessed on 23 May 2014.

[64]Jelena Miljokovic and Vanco Litovski 'Concepts of Computer Take-Back for Successful End-of-Life' (2005) 2 (5) *Facta Universitatis* Working and Living Environmental Protection Series 363, at 366.

degradation and environmental harm. Environmental costs are reflected (or internalised) in the price of every good. The result is that goods that pollute less will cost less, and consumers may switch to lower-polluting substitutes.[65] EPR therefore flows from the PPP, shifting responsibility away from municipalities to producers, including the costs of treatment and disposal into the price of the product, thus reflecting the environmental impacts of the product.[66]

2.3.1 Who is a producer?

It is necessary to define *producer* within the context of EEE management in order to understand why and how the EPR approach can be implemented. There is currently a vacuum in international law, since there is no universally adopted definition of a producer. This is so because *producer* can encompass various groups of people or companies, making it difficult to hold any one company responsible for the manufacture of EEE and eventual exportation of such products to developing countries. This thesis therefore examines the word to determine whether some responsibility can be placed upon a particular company or group of persons for EEE within a particular border or country.

The word *produce* means 'to bring into existence, to create.'[67] Thus, a product can be described as 'something that is distributed commercially for use or consumption and that is usually (1) tangible personal property; (2) the result of fabrication or processing, and (3) an item that has passed through a chain of commercial distribution before ultimate use

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[65] Originally recommended by the OECD Council in May 1972, the polluter pays principle has seen increasing acceptance as an international environmental principle. It has been explicitly adopted in several bilateral and multilateral resolutions and declarations, including Principle 16 of the Rio Declaration, which provides that 'national authorities should endeavor to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest…' See Segger *et al.,* above (note 31), at 25. See also ILA New Delhi Declaration, above (note 34) fn. 44, at 10.

[66] Rolf Widmer *et al.*, 'Global Perspectives on e-waste' (2005) 25 *Environmental Impact Assessment Review* 436-458. See also I C Nnorom and O Osibanjo 'Overview of electronic waste (e-waste) management practices and legislations, and their poor applications in the developing countries' (2008) 52 *Resources, Conservation and Recycling* 843, at 845.

[67] B A Garner (ed.) *Black's Law Dictionary* 9ed (2009) 1328.

of consumption.'[68] While Black's Law Dictionary does not define *producer*, it defines *manufacturer* as:

> A person or entity engaged in producing or assembling new products.[69]

Perhaps one of the most far-reaching general definitions of a producer can be found in the EU Product Liability Directive 85/374/EE:

> A producer is either a manufacturer of a finished product or a component part of a finished product, producer of any raw material, or any person who presents himself as a manufacturer (for example by affixing a trademark).[70]

Alluding from the above definition, the manufacturer of Electrical and Electronic Equipment, is defined under Directive 2011/65/EU as:[71]

> any natural or legal person who manufactures an EEE or who has an EEE designed or manufactured and markets it under his name or trademark.

Directive 2012/19/EU describes a producer as:

> 'a natural or legal person who -
>
> (i) is established in a Member State and manufactures EEE under his own name or trademark, or has EEE designed or manufactured and markets it under his name or trademark within the territory of that Member State;
>
> (ii) is established in a Member State and resells within the territory of that Member State, under his own name or trademark, equipment

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[68] Ibid at 1328.

[69] Ibid at 1050.

[70] It must be noted that this definition is the same as the definition of manufacturers, importers and distributors. See Article R1.3, 1.5 and 1.6 of Annex I, Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products and repealing Council Decision 93/465/EC (Conformity Assessment Procedures), available at *http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:218:0082:0128:en:PDF,* accessed on 13 June 2014.

[71] Article 3 (6) of the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, available at *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32011L0065,* accessed on 13 April 2015.

> produced by other suppliers, a reseller not being regarded as the 'producer' if the brand of the producer appears on the equipment, as provided for in point (i);
> (iii) is established in a Member State and places on the market of that Member State, on a professional basis, EEE from a third country or from another Member State; or
> (iv) sells EEE by means of distance communication directly to private households or to users other than private households in a Member State, and is established in another Member State or in a third country.[72]

These definitions reveal the variations associated with the definition of a *producer*. A producer can be a person or original equipment manufacturer (OEM), who manufacturers, sells or resells EEE within or outside a particular jurisdiction, or someone who sells EEE by means of distance communication, or affixes his or her trademark on EEE. A producer may also include a person or group of persons on whom responsibility for the entire life-cycle of an EEE rests on. In this thesis, the words *producer* and *manufacturer* are used interchangeably to represent a group of persons or a company that create EEE. Producers have the final responsibility to EEE – i.e. production of EEE with less impact on the environment and even less impact on human health when improperly handled or discarded. The strength of the EPR principle, which places responsibility on the producer, thus lies in the definition and application by national governments in e-waste legislation. Accordingly, to provide clarity concerning the implementation of the EPR principle, this thesis distinguishes between the three actors in the chain of EEE generation, transacting and transporting: producer, importer and retailer.

This thesis defines an importer as a *trader* or *waste broker* – a person or group of persons who arrange for shipping of new, used or EOL EEE via container by sea from a developed to a developing country. The purpose for which the importer arranges for shipping of EOL EEE is for monetary gain – the potential to get paid double for taking

[72] Article 3 (1) (f) of the Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), available at *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0019,* accessed on 15 April 2015. The sub-paragraph after this article also provides that 'whoever exclusively provides financing under or pursuant to any finance agreement shall not be deemed a "producer" unless he also acts as a producer within the meaning of sub points (i) to (iv).'

used EEE from a developed country[73] in order to get rid of it in a developing country where informal recycling and disassembling of such re-usable EEE is subsequently carried out. Consequently, importation appears to have facilitated the international trade between developed and developing countries,[74] as electronic components and scrap are generated in one country, assembled in another and sold in yet another country. For instance, computers that were discarded in Australia were exported to the Philippines for disassembly, with some parts subsequently re-exported to China for re-use. Also, shredded circuit boards were imported back by Australia for extraction of precious or non-ferrous metals.[75] Therefore, in a developing country context, the importer appears to be the most important entity in the e-waste trade and may be the legal entity on whom responsibility for the life-cycle of a new or used EEE rests. The EPR principle propels the producer as the main entity in the EEE chain. However, the latter part of this chapter interrogates the realistic application of the principle in a developing country context. This is expounded in Part 2.3.2 below.

The BAN estimates that in Nigeria, the origins of imported electronics, for instance, were roughly 45% from Europe, 45% from the U.S. and 10% from other locations, such as Japan and Israel.[76] Imported EOL computers exported from these countries were taken apart, the spare parts (motherboards) stockpiled in shops and warehouses, with the non-functional material (especially housing and CRTs) thrown away.[77] BAN reports the large volumes of used mobile phones imported into Nigeria, and its boards and parts are taken apart and collected for exporting to China for materials recovery.[78] Hence, the definition

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[73] BAN/SVTC *Exporting Harm – The High-Tech Trashing of Asia* 25 February 2002 at 13, available at *http://www.ban.org/E-waste/technotrashfinalcomp.pdf,* accessed on 13 June 2014.

[74] Catherine Alexander and Joshua Reno (eds.) *Economics of Recycling: The global transformation of materials, values and social relations* (2012) 100.

[75] A Kellow 'Baptists and bootleggers? The Basel Convention and metals recycling trade' *Agenda,* 6 (1): 29-38. See also Alexander and Reno, above (note 81) at 101.

[76] Basel Action Network *The Digital Dump: Exporting Re-use and Abuse to Africa* Media Release Version, 24 October, 2005 at p. 12, available at *http://ban.org/library/TheDigitalDump.pdf,* accessed on 10 June 2014.

[77] Ibid at 19.

[78] Ibid.

of an *importer/waste broker* is particularly important here, since it qualifies and explains who the main actor is in the continued trade in e-waste to developing countries. In this thesis, in the chain of actors in relation to WEEE, the importer can also be the retailer.

A *retailer* can be described generally as a person or entity engaged in the business of selling personal property to the public or to consumers, as opposed to selling to those who intend to re-sell the items.[79] Thus, in the EEE context, retailers are distinguished from producers in that they sell new or used EEE manufactured by the producers in various retail outlets, shops or stores.

While the classification of these legal entities are important in a general context, the importer is the central actor in the used EEE and e-waste trade in a developing country context. As emphasised in Chapter 1, seeking to avoid the environmental costs of disposal, developed countries ship re-usable or second-hand EEE to developing countries under the guise of re-use. While this is permissible under the Basel Convention 1989 by virtue of the 're-use clause,'[80] more than 75% of such EEE shipments are not re-usable and are actually e-waste imported into developing countries for crude disposal. Such shipments are facilitated by an importer, i.e. a person or group of persons who arrange for shipping of new or used or EOL EEE per container by sea from a developed to a developing country. Although such shipments are usually for monetary gain and there is a ready market for dismantling and materials recovery of e-waste, it is clear that a strict EPR approach may not be feasible in such a jurisdiction. A strict EPR approach that seeks to place certain responsibilities on a producer of EEE until the product reaches its EOL cannot find expression in a developing country context, and requires a shift in responsibility from the producer to the importer of such used EEE, the shipment of which may contain e-waste. Accordingly, the extent of a producer or importer's liability from a jurisdictional perspective is examined below, using Lindhqvist's classification of responsibilities.

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[79] Garner, above (note 67) at 1430.

[80] See List B (B1110) of Annex IX to the Basel Convention 1999.

2.3.2 Classification of producer responsibilities

In a bid to highlight the fact that producers must be accountable for the life-cycle of EEE, Lindhqvist sets out a classification of the different responsibilities or duties envisaged under the EPR principle. Lindhqvist's classification is particularly important because it has helped shape current discussions of EPR. EPR is considered by the OECD and the EU to be one of the most promising means to combat the increasing generation of waste and pollution. It is recognised as a concept that changes the balance of responsibility among the actors of a products' life-cycle, with special attention to a products' EOL.[81] It is considered an ecological extension of product liability law's goals, such as reducing injury and to spur improved product design, making the rationale for EPR focused on making producers responsible for long-term environmental management of their products.[82] Linking this to e-waste, it means that it seeks to define the unequivocal responsibility of specific actors in the EEE chain described above.

Adopting this classification here is a useful tool to measure the success of an EPR system in any given jurisdiction, particularly in South Africa, which is used as a model for Nigeria. These responsibilities include legal liability, economic responsibility, physical responsibility and informative responsibility.[83]

- Liability refers to the legal responsibility for proven environmental damages caused by the product in question, and the extent of this liability is determined by legislation, which may encompass different life-cycles of the product, including usage and final disposal.[84]

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[81] V Langrova, 'Comparative analysis of EPR programmes for small consumer batteries: Case study of the Netherlands, Switzerland and Sweden' (2002) IIIEE Report, The International Institute for Industrial Environmental Economics, IIIEE, Lund University at 10, available at *http://s3.amazonaws.com/zanran_storage/www.iiiee.lu.se/.../685901561.pdf*, accessed on 18 November 2013.

[82] Noah Sachs 'Planning the Funeral at the Birth: Extended Producer Responsibility in the European Union and the United States' (2006) 30 *Harv. Envt.L Rev* 51 at 53.

[83] Lindhqvist Thesis, above (note 61) at 9.

[84] Ibid.

- Economic responsibility, on the other hand, means that the producer covers all or part of the expenses for the collection, recycling or final disposal of the products it manufactures. These expenses could be paid for or directly by it or a special fee.[85]
- Physical responsibility refers to a characterisation of the systems in which the manufacturer is involved in the physical management of the products and/or their effects. This means that the manufacturer retains ownership of the products all through their life-cycle and is thus linked to any environmental problem(s) of the product, if any.[86]
- Informative responsibility envisages the extension of responsibility for the products by requiring producers to supply information on the environmental properties of the products they manufacture.[87]

Lindhqvist's classification is very useful. It is therefore adopted (hereafter, 'the EPR matrix'), and the classification discussed below.

A producer's liability involves certain negative effects that arise from product disposal.[88] This means the producer must ensure that it has a plan at the manufacturing stage, to ensure that EEE disposal at its EOL is effectively carried out in an environmentally friendly way. A producer must also bear in mind that there may be some form of legal action against it should any proven environmental damage occur as a result of usage of the product. This responsibility can be summed up to mean legal accountability for usage and final disposal of an EEE. It may also include hazardous waste collection as

[85] Ibid.

[86] Ibid.

[87] Ibid.

[88] Anthonio Massarutto 'The long and winding road to resource efficiency – An interdisciplinary perspective on extended producer responsibility' (2014) 85 *Resources, Conservation and Recycling,* available at *http://www.sciencedirect.com.ezproxy.uct.ac.za/science/article/pii/S0921344913002504*, accessed on 13 June 2014.

well as disposal liabilities and hazardous waste remediation liabilities[89] set out under appropriate hazardous waste or e-waste legislation.

Economic responsibility seeks to improve policy design from an efficiency perspective.[90] Therefore, economic responsibility is particularly concerned with the financial aspects relating to the collection, recycling and/or final disposal of the manufacturer's EEE. This means that, per Lindhqvist's idea of the EPR principle, a producer is responsible for recycling of consumers EEE and logistics of fixed fees among producers (guided by PROs, as will be discussed below) on the quantity of products sold.[91] This responsibility also involves the use of specific economic instruments such as material/product taxes, advance disposal fee systems, deposit-refund systems or ARFs.[92] The most common of these economic/financial instruments are the latter three. The disposal fee system charges the end-user for the cost of recycling. These fees can be used to amass funds to undertake recycling operations when EOL EEE products arrive at disposal streams such as municipal junkyards.[93] The deposit refund system, which taxes production or consumption, is associated with a subsidy proportional to product recycling, where the financing of subsidies can be handled through the taxes collected.[94] It

[89] Chris van Rossem, Naoko Tojo and Thomas Lindhqvist 'Extended Producer Responsibility – An examination of its impact on innovation and greening products' (2006) Report commissioned by Greenpeace International, Friends of the Earth and the European Environmental Bureau (EEB) at 3.

[90] K Palmer and M Walls 'Extended product responsibility: and economic assessment of alternative policies' (1999); T Kinnaman 'The Economics of Waste Management' (2009) 29 *Waste Management,* pp 2615-2617. See also Anthonio Massarutto, above (note 88).

[91] Kieren Mayers and Scott Butler 'Producer Responsibility Organisations Development and Operations – A Case Study' (2013) 17 (2) *Journal of Industrial Ecology* pp. 1-13 at p. 2.

[92] Rossem *et al.,* above (note 89) at 3.

[93] Atalay Avasu and Luk N van Wassenhove 'An Operations Perspective on Product Take-Back Legislation for E-Waste: Theory, Practice, and Research Needs' (2011) 21 (3) *Production and Operations Management Society* 407 at 409.

[94] Ibid at 409.

incentivises consumers to return EOL EEE products to an appropriate collection point.[95] This is more general than ARF.[96]

On the other hand, ARF involves the placement of a recycling levy for EEE products at the point of sale to consumers. The purpose of such fees may be to defray recycling or other disposal costs of such EEE at its EOL. It typically uses collected fees to finance a state-controlled recycling system.[97] These instruments/systems can be effectively implemented through PROs, but the enforcement of this type of economic responsibility is better done through mandatory legislation, particularly when government expressly recognises and implements take-back systems,[98] in order to charge recycling fees to producers, consumers or other stakeholders.

Physical responsibility is concerned with the physical design and management of EEE. It promotes *eco-design*, a technique for product development that is fundamental for process enhancement and the development of components. It also enables designers to redesign products by considering environmental issues.[99] Eco-design can also identify the environmental aspects of a product and can integrate them into the product design and development process early.[100] Thus, the application of eco-design of EEE is very important to minimise the environmental effect of components within EEE on the environment. To this extent, the classification of physical responsibility is tied to a producer's environmental responsibility. The physical and environmental element of responsibility also bears similarities with the liability element above, as an EEE producer

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[95] Rossem *et al.,* above (note 89) at 4.

[96] Avasu and Wassenhove, above (note 93) at 409.

[97] Ibid at 409.

[98] This is discussed later in this chapter.

[99] E R Platcheck, L Schaeffer, L W Kindlein Jnr., L H A Candido 'Methodology of eco-design for the development of more sustainable electro-electronic equipment' (2008) 16 (1), *Journal of Cleaner Production*, pp. 75-86.

[100] P J Park, K Tahara 'Quantifying producer and consumer-based eco-efficiencies for the identification of key eco- design issues' (2008) 16 (1) *Journal of Cleaner Production* 16(1), pp. 95-104. See also Chi-Shun Liao, Kuo-Ren Lou and Ching-Tzu Gao 'Sustainable development of electrical and electronic equipment: user-driven green design for cell phones' (2013) 22 *Bus Strat Env* 36 at 37.

is obligated to ensure that no environmental damage arises from usage and final disposal of products.

However, it can be argued that Linhqvist's allusion to physical responsibility, where the manufacturer retains ownership of the products all through its life-cycle, is unrealistic. As explained above, a producer's responsibility for the entire life-cycle of a product may cease once a product is passed on to the retailer or importer, depending on prevailing circumstances. This means that when it passes into the hands of a consumer, such ownership passes to the consumer who uses such products often and is therefore responsible for its use until its EOL. The consumer therefore becomes liable to the extent that he or she does not deposit such EOL EEE at an e-waste collection facility or centre for recycling, but rather crudely disposes of it in an open dump, or disregards the informational manual provided when purchasing new or used EEE.

Informative responsibility extends the producer's responsibility for products by requiring the supply of information to consumers/end-users on the environmental properties of the EEE it manufactures. Such responsibility includes reporting to authorities, marking/labeling EEE products and components, providing information to consumers about producer responsibility/source separation, or providing information to consumers about the structure and substances used in products.[101] This responsibility cannot be removed from any discourse relating to EPR or producer responsibility, since it is one of the most important responsibilities required of a producer. Bearing in mind that the right of access to information has been entrenched in international and national legislation over the past few decades, it is therefore important that consumers/end-users and the general public are made aware of the components/properties contained in EEE. A producer can adhere to this requirement by providing written information regarding an EEE's properties and their effects on health and environment, or as one of the documents that accompany the packaged EEE for sale. Another strategy would be to ensure that retailers are obligated to pass on the information to consumers by word of mouth, or to emphasise the need to read the accompanying instructional document on the EEE.

[101] Rossem *et al.,* above (note 89) at 3.

However, it must be noted that the EPR matrix may be restrictive in its application between developed and developed countries, and in the context of a producer and an importer. Realistically, legal liability, physical responsibility and informative responsibility can be imposed on an EEE producer in any jurisdiction, as the common factor intrinsic to these types of responsibilities is information and care, which should be taken to discharge these responsibilities at the initial manufacturing stage and just before it is placed on the market for sale. An importer in a developing country may also bear legal liability for usage and final disposal of an EEE, including include hazardous waste collection and disposal liabilities and hazardous waste remediation liabilities (as noted above). On the other hand, while the economic or financial responsibility under the EPR matrix is applicable in a developed and a developing country context, it appears that an economic/financial responsibility is the only one of the four responsibilities can be effectively imposed on an *importer* of used EEE in a developing country context, in order to deter further importation of e-waste under the guise of re-use. An import fee (which covers the cost of recycling of such used EEE imported into a developing country) can be imposed on the *importer* at the point of entry into the ports. Such an import fee may be necessary, particularly in a developing Nigeria, to check the incessant importation of e-waste into this jurisdiction, and deter would-be importers of same from brokering e-waste deals, with a focus more on shipment of used EEE for re-use rather than shipment for disposal. This may be clearly set out in legal instruments in such a jurisdiction.

Thus, the EPR principle coalesces the concept of sustainable development, and is presented as an integral policy tool that represents the producer as the key entity in the EPR matrix. The producer is responsible for EEE manufactured, ensuring that they take responsibility for any impacts occasioned thereby to human health and on the environment during its usage and entire life-cycle. However, the particular entity responsible for the importation of e-waste into developing countries under the guise of used EEE (i.e. the importer) must be considered. The importer and where possible the consumer must therefore also share some responsibility. The extent to which the EPR principle can be applied and extended to include the importer and consumer through mandatory regulation or voluntary initiatives is expounded below. Still, a recognition and adoption of the EPR principle is a necessary one in any jurisdiction owing to the economic, social and

environmental underpinnings that are contained therein. As stated earlier, the principle of integration of economic, social and environmental objectives, a core tenet of sustainable development, runs through the discourse of this thesis. The EPR matrix, which highlights the economic, environmental responsibilities of producers, further exposes certain incentives. These incentives are now set out below in order to highlight the importance of a sustainable approach to EEE management via the EPR approach.

2.4 Socio-economic and environmental benefits of EPR-based approaches in e-waste management

The sustainability of the EPR approach lies in the economic, social and environmental incentives it conveys for e-waste management. These list these incentives to provide a more informed basis as to why a sustainable EPR-based regulation on e-waste is imperative in any jurisdiction, particularly Nigeria.

2.4.1 Economic incentives

The allocation of financial and organisational responsibility on producers or shared responsibility among stakeholders in industry provides a nation's economy with an economic advantage, because the responsibility for recycling, treatment and collection no longer rests on the government but on taxpayers. By mandating that producers internalise the costs associated with recycling their products, producers will have an incentive to design their products for ease in recycling in order to minimise their future costs.[102] Similarly, the competitive market creates an additional incentive to reduce recycling costs, because most internalisation of costs by producers will be ultimately felt by consumers via higher purchase costs.[103] Conversely, any reduction in these costs would allow a producer to keep its product costs low and potentially to attract more consumers.[104] Additionally, shifting responsibility for managing e-waste from the government to

[102] Catherine K. Lin, Linan Yan and Andrew N. Davis, 'Globalization, Extended Producer Responsibility and the Problem of Discarded Computers in China: An Exploratory Proposal for Environmental Protection' (2002)14 *Geo. Int'l Envt'l. L. Rev*. 525, 541-542.

[103] Phoenix Pak 'Note: Haste Makes E-Waste: A Comparative analysis of How the United States should Approach the Growing E-waste Threat' (2008) 16 *Cardozo J. Int'l & Comp. L.* 241 at 260.

[104] Ibid at 259.

producers or other stakeholders relieves much of the financial burden on municipalities to handle and process e-waste.[105]

It should be noted that the recycling processes in any EPR legislation must be economically sustainable, meaning that the separation and recovery of the various materials are done only if they can be profitably sold as secondary material for re-use in new products.[106] It is therefore imperative that, in a developing country such as Nigeria, the economic efficiency (cost and profit) for the recovery and disposal strategy for e-waste management be considered.[107]

2.4.2 Environmental incentives

The shift in responsibility that the EPR approach envisages provides some protection for the environment in the sense that, where an EPR approach is wholly adopted, recycling becomes the most logical method used for EOL EEE. However, in a bid to recycle EOL EEE, it is also important that such a method must not create more debilitating impacts on the environment than the disposal method. Therefore, if manufacturers know that they will bear the burden of effort in recycling toxic substances contained in and at the EOL of a product, they will have an incentive to redesign products, to the extent feasible, to avoid adverse environmental impacts.[108] Fishbein puts it thus:

> A producer that responds to EPR by making a less wasteful and more recyclable product will reduce the huge environmental impacts of raw materials extraction…, as well as the impacts of materials and energy use associated with materials processing and the manufacture of new products...[109]

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[105] Ibid at 259.

[106] Pia Tanskanen 'Management and recycling of electronic waste' (2013) 61 *Acta Materialia* 1001-1011 at p. 4.

[107] Yacan Wang *et al.,* 'Determining Optimal Disposal and Recovery Strategies of Discarded Appliances under Extended Producer Responsibility (2010) IEEE at 2, available at *http://www.researchgate.net/publication/251939240_Determining_optimal_disposal_and_recovery_strategies_of_discarded_appliances_under_extended_producer_responsibility,* accessed on 12 November 2013.

[108] Sachs, above (note 82) at 65.

[109] Bette Fishbein *et al.,* 'Extended Producer Responsibility: A Materials Policy for the 21st Century' (2000) at 62.

Additionally, heightened environmental standards from recycling and producing *greener* EEE have the potential to positively enhance the health of local populations dealing with the environmental consequences of untreated WEEE.[110]

2.4.3 Social incentives

In developing countries where no formal recycling system has been established, poor individuals, migrants and disadvantaged women and children with little or no formal education, constitute informal recyclers and scavengers. Adopting an EPR approach to e-waste regulations also provides for the integration and formalisation of the e-waste recycling sector, combining the integration of the formal sector with the informal.[111] Where a financial burden is placed on either producers or consumers in a jurisdiction with an EPR-based regulation on e-waste, these categories of people become recognised as persons who can form part of voluntary take-back schemes (as addressed below) in the informal recycling of e-waste. These persons work hand-in-hand with recognised stakeholders, under improved, healthy conditions, and are legally involved in voluntary take-back schemes, which eventually serve to enhance their skills and personal development.

2.5 Methodologies and approaches to the implementation of EPR to e-waste

There are three primary methodologies to be utilised in sustainable e-waste management. The first is the EPR approach, as analysed above. The 'purest' form of EPR is reflected in take-backs of products by the producer.[112] Take-backs refer to an interrelated system geared to e-waste collection and processing via direct regulations or necessary

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[110] Nicole C Kibert 'Extended Producer Responsibility – A Tool for Achieving Sustainable Development' (2003-2004) 19 *J. Land Use & Envt'l Law* 503 at 522.

[111] Karin Lundgren *The Global Impact of e-Waste: Addressing the Challenge'* (2012) International Labor Organization: Geneva at 49.

[112] Piet Coopman 'Extended Producer Responsibility: Getting It Right' March – April (2015) *Waste Management World* 27-28.

incentives.[113] Such a system has four key components: a) the rules that govern the system; b) the operational areas of collection and processing; c) the financing of the system; and d) how to control the flow of e-waste inside and outside a jurisdiction.[114]

The second is a referred to as PS. Elisha refers to it as a 'diluted version' of 'pure EPR initiatives,' as pure EPR places the full responsibility on producers for EOL EEE recycling and disposal[115] PS is an 'umbrella term adopted in the United States of America for a 'shared responsibility approach for managing products at end-of-life,'[116] and therefore, an extended form of the EPR principle. This principle of shared responsibility[117] is one where producers, retailers, consumers, waste operators, and state and local governments voluntarily share the responsibility for e-waste management.[118] It involves dialogue between state governments, industry, and consumer and environmental groups to arrive at better management practices for particular products.[119] Product stewardship schemes are basically a cradle-to-grave tool and, at any of the stages, commonly used methods such as product redesign, consumer information, collection and recycling schemes, special financing mechanisms, deposit refund, or advanced disposal fee schemes can be utilised to reduce environmental impact of e-waste.[120] The PS scheme could also be mandatory. As an environmental policy tool, it is similar to the EPR principle, but the latter is broader in scope and confined to the producer. However, it appears that PS schemes may be most

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[113] Duncan McCann and Annelaure Wittmann 'E-waste Prevention, Take-back System Design and Policy Approaches' Step Green Paper, 13 February 2015 at 13.

[114] Ibid at 14.

[115] Hannah H Elisha 'Addressing the E-waste Crisis: The Need for Comprehensive Federal E-Waste Legislation within the United States (2010-2011) 14 *Chap. L. Rev*. 195, fn. 116 at 210.

[116] Helen Lewis 'Defining product stewardship and sustainability in the Australian packaging industry' (2005) 8 (1) *Environmental Science & Policy* 45 at 48.

[117] Jennifer Ann Hoeveler 'International Approaches to Dealing with Electronic Waste' (2009) 13 *N Z J Envtl L* 117 at 140.

[118] See generally 'Product Stewardship: Basic Information, US Environmental Protection Agency,' available at *http://www.epa.gov/waste/partnerships/stewardship/basic.htm,* accessed on 16 November 2013.

[119] Sachs, above (note 82) at 90.

[120] Hoeveler, above (note 117) at 140.

effective if the environmental responsibility of all participants outweighs their economic interests.[121]

The third system, which is referred to as the advanced recycling fee (ARF), places the financial burden of e-waste disposal on consumers and places the physical burden of disposing of and recycling used electronic goods on the government.[122] Under ARF systems, consumers pay an advance collection deposit fee when they purchase electronic products. Retailers collect these fees for the government, and the government then redistributes the funds to public and private entities that manage disposal and recycling.[123] An ARF has an additional benefit that is not present in a producer-funded take-back system; it would help consumers to understand that there is a real environmental and disposal cost for [EEE] products that they purchase that contain hazardous substances.[124] It also would help consumers to understand that pollution is not caused only by industrial firms, but also by individual consumption decisions.[125] As stated above, a disposal fee rather than an ARF can be utilised separate from an ARF or in conjunction with the ARF. The difference between the two approaches is the timing of the fee charge. With ARF, the fee is charged at the moment of purchase of EEE, and with the disposal fee, the fee is charged at the point of depositing the EOL EEE at the collection centre or recycling facility. Therefore, together, PS and ARF form part of the concept of EPR.

These schemes exist independently of each other but are structured in such a way that they can assist each other in any jurisdictional framework that regulates e-waste. They are all policy measures, and the difference between all three schemes lies in the onus of responsibility, with EPR placing sole responsibility on manufacturers; product stewardship ensuring that there is shared responsibility between various stakeholders; and

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[121] Ibid.

[122] Elisha, above (note 115) at 213.

[123] Ibid. See also Jennifer Kutz, 'You've Got Waste: The Exponentially Escalating Problem of Hazardous e-Waste,' (2006) 17 *Vill. Envtl. L. J.* 307 at 323.

[124] Sachs, above (note 82) at 96.

[125] Ibid.

the ARF placing responsibility for payment for e-waste disposal on consumers. The ARF system, disposal fee or applicable financial instrument is particularly attractive, because it seeks to to place financial responsibility on consumers who use and enjoy these EEE.

Accordingly, while the EPR principle is promoted as the key policy tool for sustainable environmental management of e-waste, the strict application of the EPR matrix to only a producer may not be practicable, because most new EEE are produced in developed countries and not in developing countries. A pure form of EPR envisages the application of the EPR matrix solely on the producer. However, in this thesis, it is argued that, in order to achieve the stated objective of sustainable e-waste management in a developing country such as Nigeria, where e-waste is imported under the guise of used EEE, it is imperative that the EPR principle be extended to include a mix of product stewardship and ARF, i.e. EPR/PS/ARF. This is because policy measures produce the best results when they are applied in a mix.[126] The notion of shared responsibility will find better expression in a country such as Nigeria, where there are no existing recyclers or e-waste collection facilities, rather than waiting on an EEE producer from for instance Germany to take up the legal, economic, physical and informative responsibility for EEE utilised in Nigeria. Rather, if there is a mix of EPR/PS/ARF systems, it imposes responsibility on the *importer* of new and used EEE in a developing country context. Accordingly, the economic instrument type that would be apply therein would be an import levy on the importer, to be collected and utilised towards the development of e-waste collection centres by the government, and/or recycling facilities, in the absence of private e-waste recycling facilities. The peculiarity of the Nigerian situation is such that poverty underpins all sectors of society. Having consumers pay a 'tax' as they purchase EEE will only encourage them to purchase electronics in states or countries with no ARFs in order to avoid the fee.[127] Consumers will also resort to back-door tactics of buying EEE whenever they travel overseas and that can be smuggled in via their luggage when they

[126] Coopman, above (note 112) at 27.

[127] Natural Resources Defense Council, Statement of the Natural Resources Defense Council before the New York City Council's Committee on Sanitation and Solid Waste Management Regarding Intro. 643, The Electronic Equipment Recycling and Reuse Act of 2005, October 24, 2005 at p. 5 in Elisha, above (note 114) at 227.

enter the country. Thus, it seems that the best approach with the possibility of implementation would be a combined application of pure EPR initiatives, PS (which also places responsibility on government and retailers) and the ARF. This combined approach of policy tools further encapsulates and promotes the notion of sustainable e-waste management. However, in order for this interlinkage of EPR schemes to work, there must be a clear expression and definition of a *producer*, as differentiated from an importer/waste broker, retailer and consumer. There must also be a dedicated focus on enforcement and compliance. This can best be done by mandatory WEEE policy instruments or WEEE specific legislation to this effect. An analysis of existing WEEE in Nigeria is done in Chapter 5.

However, it can be argued that EPR has become a more conventional system, because it not only independently lifts the burden from consumers and taxpayers, but it also encourages manufacturers to evaluate and internalise the EOL costs of their products.[128] This manner of evaluation means that, in recent times, with emphasis on environmental protection and development, most producers have become aware of the need to create new EEE in such a way as to reduce impacts on the environment. This new *eco-design* is then 'internalised' and applied by virtue of the PROs. This is now discussed below in some detail.

The EPR mechanism is a central one because it implements the PPP in effect by acknowledging that the manufacturers are the polluters. These manufacturers are referred to as polluters, because the components used for the creation and packaging of the EEE are eco-toxic, i.e. the components (as described in Chapter 1) contain certain toxic substances that pollute the environment when improperly handled or disposed. Accordingly, manufacturers who know they will ultimately be responsible for disassembling and recycling the electronic goods they produce are more likely to use less toxic materials in the production process. Therefore, the EPR compels producers to design

[128] Kutz, above (note 123) at 324 -325. See also 'Key Elements of EPR Plan, Clean Production Action,' available at *http://www.cleanproduction.org[Producer.Key.Examples.php,* accessed on 17 November 2013.

products with longer life-spans that are easier to disassemble and recycle.[129] This systemic approach to manufacturing EEE while ensuring minimal environmental impact is integration under the concept of sustainable development. This ability to successfully combine the social, environmental and economic ideals that form the core of sustainable development while providing the most coherent, intellectual and pragmatic framework (for e-waste)[130] forms the crux of this thesis.

This thesis advocates the application of the EPR principle because of the PPP and the manner in which it recognises the integrative approach of sustainable development. However, it also recognises that, in reality, a producer cannot solely bear responsibility for EEE when such EEE passes on to a both retailer and consumer, as explained above. A workable approach to the sustainable management of EEE via EPR in a developing jurisdiction will be to include elements of PS and ARF so that the producer, retailer and consumer share the responsibilities, even as government fulfils its duty to its citizens by regulating the management of such EEE.

However, to ensure that producers of EEE are held accountable for their actions in the manufacturing of EEE and other products, a central organisation called a Producer Responsibility Organisation (PRO) needs to exist. A PRO is a cooperative industry initiative that requires producers to collectively handle collection and arrange for recycling on behalf of industry to ensure that member companies are able to meet their obligations.[131] There is no universally accepted global definition of a PRO. In some states and countries, PROs are consortia of companies obligated to meet collection or recycling requirements; in others, the PROs are commercial contractors who service the obligated companies.[132] The two types of producer responsibility are discussed below.

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[129] 'About Producer Responsibility, Electronic Take back Coalition,' available at *http://www.electronicstakeback.com/promote-good-laws/about-producer-responsibility/,* accessed on 13 November 2013. See also Elisha, above (note 110) at 34.

[130] French, above (note 2) at 213.

[131] Anton Nahman 'Extended producer responsibility for packaging waste in South Africa: Current approaches and lessons learned' (2010) 54 (3) *Resources, Conservation and Recycling* 155 at 165.

[132] Reid Lifset, Atalay Atasu & Naoko Tojo 'Extended Producer Responsibility – National, International and Practical Perspectives' (2013) 17 (2) *Journal of Industrial Ecology* pp. 1 at 2. See also Mayers and Butler, above (note 91) at pp. 1-13.

2.6 Producer responsibility organisations – individual producer responsibility (IPR) and collective producer responsibility (CPR)

Cooperative industry efforts to collectively shoulder the responsibilities of its member companies (producers) to meet their EPR obligations are often instituted and are referred to as PROs.[133] The EU recognised the importance of PROs in its Directive 2012/19/EU[134] (WEEE Directive), stating that 'producer responsibility is one of the means of encouraging the design and production of electrical and electronic equipment which take into full account and facilitate their repair, possible upgrading, re-use, disassembly and recycling.'[135] It further reinforces the importance of PROs in WEEE management in its Article 12.3, stating that 'for products put on the market later than 13 August 2005,'[136] each producer shall be responsible for financing the collection, treatment, recovery and environmentally sound disposal of WEEE from private households deposited at collection facilities. The producer can choose to fulfil this obligation either individually or by joining a collective scheme.'[137] The differences between individual and collective PROs are highlighted below.

2.6.1. Collective producer responsibility

Collective producer responsibility (CPR) ensures that producers are jointly responsible for the recycling and financing of all WEEE products, including products to be sold in the

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[133]Widmer *et al.,* above (note 66) at 447. See also Nahman, above (note 131) at 156.

[134] This 2012 Directive replaced Directive 2002/96/EC, which became EU law in 2003 and has been implemented by a majority of the EU member states, including Cyprus, the Netherlands, Lithuania, Luxembourg and Sweden. See INSEAD Working Paper, above (note 61) at 15.

[135] Recital 12 of the Directive 2012.Text of the Directive, available at *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0019,* accessed on 24 May 2015.

[136] Article 8 of the WEEE Directive distinguishes between *future* and *historic* WEEE. The directive states that producers should be collectively responsible for financing historic WEEE; that is, products put on the market before 13 August 2005. This is because it is not possible for producers to influence the design of products that have already been produced. For *future* WEEE, design changes can make products easier to disassemble, more recyclable and less harmful to the environment. Therefore the WEEE Directive states that, for future products, producers should be responsible for financing the recycling of their own-branded products. See IPR Works 'About IPR,' available at *http://www.ipworks.org/about.asp*, accessed on 18 November 2013.

[137] Article 12.1 of the WEEE Directive 2012.

future. However, an INSEAD paper argues that this type of responsibility provides no incentives to a producer to design its products to be easier to recycle, but that it merely results in the costs of recycling being of similar value for all producers, whether or not they produced equipment that are designed to be easier to recycle.[138] The result of this is that if recycling costs are financed collectively, manufacturers are likely to focus only on and minimise the production costs, disregarding recycling properties and its costs.[139] If recycling costs are increased owing to a particular design modification, this would not be of financial concern to the producer, since the increased costs of recycling would be jointly absorbed by all the producers.[140]

The argument of the INSEAD paper that the collective producer responsibility on its own provides no incentives to the producer to design easy to recycle products is a valid one.[141] The reality is that collective producer responsibility may not be as effective owing to the possibility of free-riders, i.e. those who put together assembled, counterfeit and unbranded products. These people cannot be termed *producers* and are not likely to be cooperative in an EPR programme, because their activities are not regulated by law.

However, concerning CPOs, producers can be directed to conform to a particular EEE design, and regulations can be structured in such a way that they create an incentive for producers in this regard. These regulations can also be structured to include the inextricable fact that producer responsibility means that these designs must be made in a manner that doesn't result in pollution, i.e. the PPP.

2.6.2 Individual producer responsibility

[138] INSEAD Working Paper, above (note 61) at 13.

[139] Ibid.

[140] Ibid.

[141] Panate Manomaivibool *Advancing the Frontiers of Extended Producer Responsibility: The management of waste electrical and electronic equipment in non-OECD countries* Doctoral Thesis, September 2011 at 108.

Individual producer responsibility (IPR) has been described as the 'purest and original' form of EPR, which is the starting point for most e-waste regulations worldwide.[142] IPR seeks to promote design for recycling by assigning responsibility for EOL management to producers individually rather than collectively.[143] IPR takes a variety of forms. When individual producers operate their own take-back systems, they are able to design both the collection and processing systems and their own products to minimise EOL costs and environmental impacts[144] of WEEE. This allows producers to get the benefits that accrue from their own efforts.[145] However, the variation in the type and amount of individual control experience by a producer is usually described in terms of financial and physical responsibility[146] thus:

> A producer bears an individual financial responsibility when he/she pays for the end-of-life management of his/her own products. A producer bears an individual physical responsibility when 1) the distinction of the products are made at a minimum by brand; and 2) the producer has responsibility for and control over the fate of their fate of their discarded products...[147]

IPR requires that the cost to the producer of recycling WEEE be differentiated to reflect the relative cost of EOL management. Where individual producers operate their own brand recycling systems, brands can be physically separated and recycled by their original producer. If the producer is able to design its products to minimise EOL costs and

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[142] Jacob Huisman 'Too Big to Fail, Too Academic to Function – Producer Responsibility in Global Financial and E-Waste Crises' (2013) 17 (2) *Journal of Industrial Ecology* 172.

[143] Huisman; ibid at 172. See also Vera Susanne Rotter *et al.,* 'Implementing Individual Producer Responsibility (IPR) under the European WEEE directive – experiences in Germany' Proceeding – ISSST 2009 Proceedings of the 2009 IEEE International Symposium on Sustainable Systems and Technology, 1.

[144] INSEAD Working Paper, above (note 61) at 12.

[145] Ibid at 12.

[146] Ibid at 12.

[147] C van Rossem, Naoko Tojo and Thomas Lindhqvist 'Lost in Transposition: A study of the implementation of the Individual Producer Responsibility in the WEEE Directive' The International Institute for Industrial Environmental Economics; Report Commissioned by Greenpeace International, Friends of the Earth Europe and the European Environmental Bureau (EEB) at 3, available at *http://www.greenpeace.org/international/Global/international/planet-2/report/2006/10/lost-in-transposition.pdf,* accessed on 12 June 2014.

environmental impacts, the producer will get the financial benefits that accrue from this investment.[148] IPR, as a form of EPR, is therefore a very important tool in motivating producers of EEE to have regard to the re-design of their products to ensure proper EOL management of e-waste.

From this, it appears that IPR would be the more attractive form of PRO to producers owing to the economic and financial benefits, while reducing environmental impacts. It internalises economic and environmental benefits, which is very important in achieving less importation of EEE to developing countries.

However, Fishbein notes that although the terms of individual and collective responsibility have not been and are still being properly defined, the distinction between them hinges on whether the system will reward companies that 'do the right thing' by designing less wasteful, more recyclable products and developing economical recycling strategies.[149]

2.7 EPR approaches to e-waste management

As stated in 2.5 above, the purest form of EPR is the take-back of products by the producer.[150] EPR can be implemented through either mandatory or voluntary EPR schemes. The reasons behind *take-backs* are mainly ecological, i.e. ensuring that EEE is no longer being disposed of crudely by way of landfill sites and incineration, which release heavy metals such as chromium, lead, mercury and other brominated flame retardants,[151] which become toxic when improperly disposed. These take-back schemes are achieved by introducing tax incentives (as envisaged by the ARF system above), which will – in turn – be passed on to manufacturers to enable them dispose, recycle or eliminate/reduce

[148] INSEAD Working Paper, above (note 61) at 12.

[149] Bette K Fishbein, *Waste in the Wireless World: The Challenge of Cell Phones* (2002) New York: INFORM Inc. at 56, available at *http://informinc.org/reportpdfs/wp/WasteintheWirelessWorld.pdf*, accessed on 17 November 2013.

[150] Coopman, above (note 112) at 27-28.

[151] Hoeveler, above (note 117) at 124.

the amounts of toxic materials in the EEE at the design and manufacturing stages[152] or, where applicable, the consumer and government.

Voluntary EPR approaches may be created by agreements arising from of a memorandum of understanding between the industry and government, often stemming from a desire by the industry to avoid the imposition of potentially harmful regulations.[153] Government must set a framework within which industry must act, but producers should be given the financial and physical responsibility to ensure that they fulfil their obligations, and the freedom to find the most cost-effective way of doing so.[154] Under this approach, there are no laws or government regulations mandating compliance, and no penalties for not meeting the goals.[155] The advantage of voluntary take-back approaches lies in industry's willingness to recycle EEE to avoid debilitating effects of disposal. It signifies a recognition of the need to apply mechanisms to avoid environmental pollution at all costs and the need to manage EEE in a more sustainable way. The disadvantage of this approach is that, because more often than not, they are voluntary initiatives by industry, there is no binding obligation on voluntary recycling companies to adhere to certain standards or rules, apart from that which the company has set for itself.

Mandatory EPR approaches refer to a situation where the government mandates manufacturers, importers, distributors and/or retailers to take products back at their EOL, usually in combination with a recovery or recycling target. Mandatory recycling requirements are important components of EPR (e-waste) programmes, as there would be no point to separately collect products under an EPR programme if producers or their contractors were permitted to landfill or incinerate the products once collected.[156] These

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[152] Nnorom and Osibanjo, above (note 66) at 847.

[153] Widmer *et al.,* above (note 66) at 845.

[154] D C Wilson 'Stick or Carrot? The use of policy measures to move waste management up the hierarchy' (1996) 14 *Waste Management and Research* 385-98.

[155] M Walls *Extended Producer Responsibility and Product Design: Economic Theory and Selected Case Studies* March 2006, Discussion Paper. RFF DP 06-08, Resources for the Future, Washington at 3, available at *http://www.rff.org/Documents/RFF-DP-06-08.pdf,* accessed on 17 November 2013.

[156] Sachs, above (note 82) at 80.

mandatory obligations usually take the form of legislation on recovery laws or general regulatory framework relating to waste, as in the case of South Africa. Mandatory product take-back laws are important, not only because they reduce the environmental impacts of EOL products by avoiding the release of hazardous materials into discharge streams, but also with the rationale of providing incentives for manufacturers to design products that are easier to recover so as to effectively reduce the product recovery costs.[157] The problem associated with mandatory take-back regulations lies in its enforcement and ensuring that manufacturers comply with the relevant regulations. As is typical with waste management, there will also be the problem of collating accurate data of number of products manufactured and particular products that have been re-designed, if there is ineffective monitoring and control by the relevant departments in charge.

Both voluntary and mandatory take-back approaches can be jointly included in a regulatory framework on e-waste in any jurisdiction. Empirical research conducted via key informant interviews in the e-waste industry in South Africa identifies four primary ways in which both voluntary and mandatory approaches may be applied in the effective management of e-waste. They are:

a. A mandatory approach through waste/e-waste regulations, as described above (hereafter, mandatory approach);
b. Voluntary approaches developed originally by industry, but over time, developed jointly with government. Such joint collaboration between industry and government is strengthened through mandatory legislation to that effect, setting out the responsibilities of both government and industry concerning e-waste management (the voluntary to mandatory approach);
c. Voluntary approaches developed by industry through formalised structures, but which do not form a part of mandatory regulations (the formal-voluntary approach); and

[157] R Lifset and T Lindhqvist 'Producer responsibility at a turning point?' (2008) 12 *J. Ind. Ecol.* 144-147. See also Atalay Avasu and Ruvi Subramanian 'Extended Producer Responsibility for E-Waste: Individual or Collective Producer Responsibility?'(2012) 21 (6) *Production and Operations Management Society* at 1042.

d. A voluntary approach developed by industry and implemented in an informal manner. This approach is less strict and relies on member goodwill to ensure its success (the informal-voluntary approach).

This thesis adopts this categorisation and elaborates on it in Chapters 4 and 5. The South African and Nigerian approaches are discussed against this categorization to emphasize which of these approaches is adequately utilised in each jurisdiction. Additionally, e-waste companies and organisations in South Africa are discussed further in Chapter 4 against the background of these categories. Consequently, the latter two voluntary approach categories are usually the preferred forms of implementing EPR strategies, mainly to maintain industry independence without regulation by government. The adoption of both take-back EPR approach types is important, since they incorporate recycling methods aimed at ensuring minimal pollution by the polluter (producer) or importer, and create tax incentives for this. It can be argued that the inclusion of these two EPR approach types is preferable for a WEEE-specific legislation, because industry-led initiatives must work with government if there is to be any headway in managing the EEE trade in developing countries. The purpose of environmental legislation is to ensure some form of command and control for WEEE. Voluntary initiatives also serve to reduce and obliterate the need for improper disposal of WEEE since such voluntary facilities exist. Bearing in mind that, as stated above per Agenda 21, the integrative principle of sustainable development can be effected through national governments, the application of both voluntary and mandatory take-back schemes in national legislation appears to be the best form of sustainable management of WEEE.

Countries such as the Netherlands, Japan, Norway, Switzerland and Portugal have mandatory electronic waste recovery laws in line with the EPR approach.[158] Switzerland, which currently has the oldest and probably most successful electronic waste or WEEE system in the world,[159] is not utilised as a reference here because its methods are much more advanced than that of a developing Nigeria.

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[158] Nnorom and Osibanjo, above (note 66) at 849. See also Kahhat, above (note 8) at 1, 172; Chika Aoki-Suzuki, 'Controlling Trade in Electronic Waste' in Hieronymi *et al.,* above (note 8) at 172-174.

[159] Kahhat, above (note 8) at 1.

2.8 Challenges to the adoption of sustainable EPR WEEE regulations

Opponents to the EPR approach have reiterated that generally, it forces manufacturers to become experts in the garbage collection industry.[160] Producers are encouraged to improve their product design towards better recycling possibilities but, historically, recyclability has never been a design objective for manufacturers.[161] As producers are not recycling specialists, they are likely to be less efficient than independent companies who deal exclusively with recycling.[162]

Concerning the application of EPR in developing countries, various scholars have set out the difficulties that developing countries may face in implementing the EPR approach to e-waste management. These difficulties, among others, include: unwillingness by consumers to return goods for recycling or pay for the disposal of their waste; a lack of funding for recycling; and a lack of reliable data for designing efficient e-waste management recycling strategies in order to make rational investment decisions.[163] Another challenge may be the assignment by policy-makers of unclear and overlapping roles and responsibilities to stakeholders (PROs, importers, collectors and recyclers, municipalities, consumers).[164] However, Manomaivibool holds that the most challenging obstacle to the implementation of EPR is the potential free-riders[165] in these countries.[166]

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[160] Megan Short, 'Taking Back the Trash: Comparing European Extended Producer Responsibility and Take-Back Liability to U.S. Environmental Policy and Attitudes' (2004) 37 *Vand. J. Transnat'l L.* 1218, 1220.

[161] Rob Courtney 'Evolving Hazardous Waste Policy for the Digital Era' (2006) 25 *Stan. Envt'l L. J.* 199, 218.

[162] Short, above (note 160) at 1234.

[163] See Nahman, above (note 131) at 157. See also Widmer *et al*. (note 66) at 449-451; Nnorom and Osibanjo, above (note 66) at 854.

[164] OECD Global Forum on Environment Issues Paper 'The Sate of Play on Extended Producer Responsibility (EPR) Opportunities and Challenges' Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR) 17-19 June 2014, Tokyo, Japan, available at *http://www.oecd.org/environment/waste/Global%20Forum%20Tokyo%20Issues%20Paper%2030-5-2014.pdf,* accessed on 24 April 2015.

[165]See the definition of *free rider* above.

[166] Manomaivibool, above (note 141) at 84.

He notes that this group that puts together assembled, counterfeit and unbranded products are not likely to cooperate with an EPR programme.[167] However, other challenges exist that may present a setback to the adoption of sustainable EPR WEEE regulations in developing countries.

First, rural communities in developing African countries such as Nigeria that have low home appliance rates result in used household appliances flowing from cities into the countryside unchecked. Re-use is the norm, and even with appliances that are beyond repair, parts are replaced in second-hand markets and the appliances continue to be re-used, which makes it difficult to control EOL equipment.[168]

Second, in Nigeria, EEE is imported daily, with no figures on the number of importing agents handling such products, since they are not registered. There is also the issue of private imports of EEE, which also makes it very difficult to identify which product was identified by whom.[169] Manomaivibool suggests that implementing a successful EPR programme in the face of this will require the use of supplementary measures, such as market surveillance,[170] to minimise trade irregularities such as counterfeit products.[171]

This thesis is mindful that e-waste management on its own is a formidable task that requires a multidisciplinary approach.[172] It is also imperative that the EPR, in line with

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[167] Manomaivibool; ibid.

[168] Nnorom and Osibanjo, above (note 66) at 12. See also Michikazu *et al.,* 'Difficulties in applying extended producer responsibility policies in developing countries: case studies in e-waste recycling in China and Thailand' (2009) 11 *J. Mater Cycles Waste Manag* 263 at 267.

[169] Nnorom and Osibanjo, above (note 66) at 854.

[170] Market surveillance generally refers to activities carried out by public authorities to ensure that products comply with the requirements set out in the relevant legislation. These actions strengthen health, safety and other aspects of the public interest, such as consumer protection and a level playing field for businesses. This applies to WEEE. See European Partnership for Energy and the Environment 'Market Surveillance,' available at *http://www.epeeglobal.org/market-surveillance/what-is-market-surveillance/,* accessed on 17 November 2013.

[171] Manomaivibool, above (note 141) at 84.

[172] Sushant B Wath *et al.,* 'E-waste scenario in India – its management and implications' (2011) 172 *Environ Monit Assess* 249 at 255.

sustainable development, incorporating the combination of mandatory and voluntary schemes in e-waste regulation, should be adapted to fit each country's situation. While there is no clear-cut methodology in approaching e-waste, a sustainable EPR approach provides a clear direction in this regard.

Conclusion

If one is to meet the pace of development in an ever-changing world, new ideologies need to be adapted to fit WEEE management in line with sustainable development. Flowing from this, this chapter provided an analysis of sustainable development and EPR. It brings to the fore the principle of integration of environmental, social and economic objectives – a fundamental part of sustainable development. This threefold objective of sustainable development finds expression in the EPR approach, which provides a clear blueprint for the sustainable management of EEE and its attendant trade. Since the notion of sustainability can at best be promoted at the national level by government, the thesis advocates a sustainable approach to WEEE management. The EPR matrix provides a roadmap for EEE producers and the extent of their responsibilities. However, from the above definitions of a producer and an importer, the delineation of such responsibilities requires a thorough outlook in order to determine which responsibility can be applied to an importer of new and used EEE in a developing country context. Accordingly, utilisation of the EPR principle as a standalone policy tool may not be wholly effective in its application to sustainable e-waste management. Since environmental law envisages the application of various instruments to prevent pollution, it is worthwhile that a combined application of EPR PS and financial instruments be applied in a developing country context, where the importer is the key player. The purpose of this mix is to ensure that there is shared responsibility by all actors in the EEE chain, including the government. Objectively, PROs, which are also envisaged under the EPR principle, play a significant role in ensuring that there is cooperative producer industry efforts to ensure that obligations regarding eco-design and final disposal of EEE are borne by a producer.

Although the discourse on EPR has been actively promoted in the past two decades, it had not permeated international discourse on e-waste at the time of the adoption of the Basel Convention 1989. In the following chapter, the thesis explores the international

framework on e-waste, the purpose of such treaty obligations concerning e-waste, effectiveness of same, and the extent to which such treaties have evolved to include the EPR principle.

CHAPTER 3

INTERNATIONAL REGULATION OF E-WASTE

Introduction

This Chapter provides a systematic review of the Basel Convention, the Basel Ban Amendment and other emerging international and regional initiatives, in order to underline the evolution and adaptability of global efforts to e-waste management. It seeks to achieve this by borrowing from Onzivu's notion of adaptive governance.[1] Adaptive governance entails the ability to generate long-term, sustainable policy solutions to complex and dynamic environmental problems through collaboration among diverse stakeholders.[2] Governance is viewed as adaptable, flexible and repetitive, and extends from natural systems to human organisations. It reacts to change in ecological and human institutions and systems as science continues to evolve.[3] When applied to sustainable development policy, adaptive management requires informative measures regarding economic, social and environmental sustainability.[4] Adaptive governance emphasises continuous learning as a *sine qua non* of any response to uncertainty and systemic unpredictability of a social system.[5] Therefore, a static global normative order is inadequate to reflect dynamic and evolving realities and to respond to continually changing information and understanding.[6] Hence, 'a systematic review of the [Basel]

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[1] William Onzivu '(Re) invigorating the health protection objective of the Basel Convention on Transboundary Movement of Hazardous Wastes and their Disposal' (2013) 33 (4) *Legal Studies* 621 at 624.

[2] J T Scholz and B Stiftel (eds), *Adaptive Governance and Water Conflict: New Institutions for Collaborative Planning* (2005) 5.

[3] Onzivu, above (note 1) at 625. See generally J B Ruhl 'Thinking of environmental law as a complex adaptive system: how to clean up the environment by making a mess of environmental law' (1997) 34 *Hous L. Rev* 933 at 943; C Folke et al. 'Adaptive governance of socio-ecological systems' (2005) 30 *Ann Rev Envt Res* 441; J Oglethorpe *Adaptive Management: From Theory to Practice* (2002).

[4] Ruhl, above (note 3) at 997.

[5] Onzivu, above (note 1) at 626.

[6] Ibid.

Convention… provides a pathway for continuous learning and thinking to strengthen the legal regime governing the transboundary movement of illegal waste.'[7]

The uniqueness of Onzivu's adaptive governance lies in its ability to generate long-term, sustainable policy solutions policy solutions and the idea of collaboration among diverse stakeholders. This collaboration between government and industry in the sustainable management of e-waste is the key to achieving effective and long-term e-waste law and policy. As will be shown below, the Basel Convention's evolution since its inception in 1989 is reflective of adaptive governance in its flexibility and demand for sustainable partnerships in achieving global effective e-waste management.

3. The Basel Convention 1989

3.1 Scope of the Convention and e-waste

The UN Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal exemplifies the efforts of the international community in addressing the problem of hazardous waste.[8] The adoption of the Convention was spurred by the need to protect human health and the environment from the increased generation and complexity of hazardous waste, and the transboundary movement of hazardous wastes and other wastes.[9]

The Basel Convention came into force on 5 May 1992 upon deposit of the twentieth instrument of accession in accordance with its Article 25,[10] and is kept under

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[7] It must be noted that Onzivu's analysis focused on (re)invigorating the Health Protection Objective of the Basel Convention. Ibid at 626.

[8] Oladele A Ogunseitan 'The Basel Convention and e-waste: translation of scientific uncertainty to protective policy' (2013) at e313.

[9] United Nations Environment Programme Conference of Plenipotentiaries on the Global Convention on the Control of Transboundary Movements of Hazardous Wastes: Final Act and Text of the Basel Convention 28 I.L.M. 657 (1989). See Para 2 of the Preamble to the Convention.

[10] 'History of the negotiations of the Basel Convention' available at *http://www.basel.int/TheConvention/Overview/History/Overview/tabid/3405/Default.aspx,* accessed on 04 July 2014. As of 6th June 2015, there are 183 parties to the Convention. See United Nations Treaty Database Collection 'Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal,' available at https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-3&chapter=27&lang=en, accessed on 6 June 2015.

review by a Conference of Parties and a Secretariat.[11] The Convention's scope is limited to the transboundary movements of hazardous wastes (i.e. wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III)[12] and wastes that are not covered under Annex I or III, but are defined as or are considered to be hazardous wastes by the domestic legislation of the party of export, import or transit.[13] The Convention also covers 'other wastes' that belong to any category contained in Annex II[14] that are subject to transboundary movement.[15] However, since the initial adoption of the Convention with Annexes I to VI,[16] the Convention has evolved in terms of its definition of what constitutes hazardous and non-hazardous wastes.[17] Two new annexes, Annex VIII (comprising wastes likely to be

[11] Arts. 15 and 16 of the Basel Convention. The Conference of the Parties is the governing body of the Basel Convention and is composed of governments of countries that have accepted ratified or acceded to it. The implementation of the Basel Convention is advanced through the decisions it takes at its meetings. It also promotes the harmonisation of appropriate policies, strategies and measures for minimising harm to human health and the environment by hazardous wastes and other wastes. It also adopts the programme of work and budget of the Convention for each biennium. The Secretariat of the Basel Convention is administered by UNEP and it is located in Geneva, Switzerland. See 'Overview – Conference of the Parties (COP),'available at *http://www.basel.int/TheConvention/ConferenceoftheParties/OverviewandMandate/tabid/1316/Default.aspx,* accessed on 17 July 2014. See the Basel Convention, above (note 9) and UNEP *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* AND *Protocol on Liability and Compensation for Damage Resulting from Transboundary Movement of Hazardous Wastes and their Disposal – Texts and Annexes,* available at *http://www.basel.int/Portals/4/Basel%20Convention/docs/text/BaselConventionText-e.pdf*, accessed on 21 April 2014. See also Phillippe Sands *Principles of International Environmental Law* 2ed (2003) 694.

[12] Article 1 (a) of the Basel Convention.

[13] Article 1 (b) of the Convention.

[14] Annex II covers wastes collected from households and residues arising from the incineration of household wastes.

[15] Article 1 (2) of the Basel Convention.

[16] Annex I lists the various wastes streams to be controlled; Annex II deals with categories of wastes requiring special consideration, i.e. household wastes and residues arising from the incineration of household wastes; Annex III lists hazardous characteristics of waste; Annex IV lists disposal operations of waste; Annex VA specifies information to be provided on notification by state of export to state of import; Annex VB specifies particular information to be provided on the movement document; and Annex VI deals with arbitration in case of a dispute between parties to the Convention.

[17] Djahane Salehabadi 'Transboundary Movements of Discarded Electrical and Electronic Equipment' Solving the E-waste Problem (StEP) Initiative Green Paper Series, 25 March 2013 at 10, available at *http://www.step-initiative.org/index.php/Publications.html,* accessed on 15 June 2014.

hazardous under the Convention)[18] and Annex IX (wastes not likely to be hazardous under the Convention),[19] were adopted at the fourth CoP in Malaysia in February 1998.[20] This will be set this out in some detail later in this chapter.

These Annexes are noteworthy because they recognise certain hazardous properties contained in various EEE. Thus, the Basel Convention regulates e-waste by virtue of the following. Mobile phones contain Annex I constituents, including beryllium (Y20), copper compounds (Y22), zinc compounds (Y23), arsenic (Y24), cadmium (Y26), antimony (Y27), mercury (Y29), lead (Y31) and brominated flame retardants (BRTs) (Y45), and are hazardous wastes that are required to be controlled under the Convention. List A of Annex VIII also regulates certain hazardous constituents used in the production of EEE or found in EEE when disassembled for refurbishment. These hazardous wastes include: A1010 (metal wastes and wastes consisting of alloys of any of the following: antimony, arsenic, beryllium, cadmium, lead, mercury, selenium, tellurium and thallium), A1090 (ashes from the incineration of insulated copper wire), A1150 (precious metal ash from incineration of PCBs), A1170 (unsorted waste batteries), A1180 (waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries included on List A, mercury switches, glass from CRTs and other activated glass and PCB capacitors, or contaminated with Annex I constituents such as cadmium, mercury, lead, polychlorinated biphenyl), A1190 (waste metal cables), and A2010 (glass waste from CRTs and other activated glasses).[21] However, List B (B1110) of Annex IX does not regulate electrical and electronic assemblies or electronic scrap, including PBBs

[18] As amended by Decision VI/35 adopted by the Conference of the Parties at its Sixth Meeting held from 9 to 13 December 2002. The amendments under Decision VI/35 came into force on 20 November 2003. See *Basel Convention – Texts and Annexes*, above (note 11) at 66.

[19] As amended by Decision VI/35 adopted by the Conference of the Parties at its Sixth Meeting held from 9-13 December 2002. The amendments under Decision VI/35 entered into force on 20 November 2003. See *Basel Convention – Texts and Annexes*, above (note 11) at 74.

[20] Jonathan Kreuger, 'The Basel Convention and the International Trade in Hazardous Wastes' (2001) in Olav Scrhram Stokke and Oystein B Thommessen (eds.) (2001/2002) *Yearbook of International Co-operation on Environment and Development* 43 at 45.

[21] See *Basel Convention – Texts and Annexes*, above (note 11) at 66-68.

and electronic components and wires destined for direct re-use[22] and recycling or final disposal.[23] These electronic assemblies or scrap can also be referred to as 'second-hand' EEE, and Basel's inability to regulate this category of waste has perhaps contributed greatly to the continued EEE trade. The non-regulation of this category of waste is addressed later in this chapter.

3.1.1 The relationship between Basel Convention and the Minamata Convention

The Minamata Convention on Mercury was adopted on 10 October 2013 in Kunamoto, Japan.[24] This is similar to the Basel Convention in that it is also geared towards protection of human health and the environment from anthropogenic emissions and releases of mercury and mercury waste.[25] It cross-references the Basel Convention, requiring Basel definitions of waste to also apply to wastes covered under Minamata Convention.[26] The Minamata Convention also obligates Parties to ensure environmentally sound management (ESM) of mercury waste and to ensure that mercury waste is not transported across international boundaries except for the purpose of environmentally sound disposal in conformity with Article 11 of the Convention, and in conformity with the Basel Convention.[27] Accordingly, the Conference of Parties to the Minamata Convention is required to cooperate closely, where appropriate, with relevant Basel Convention bodies in the review and updating of the guidelines on ESM of wastes developed under the Basel

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[22] Re-use in this context can include repair, refurbishment or upgrading but not major assembly. In some countries, materials destined for direct re-use are not considered wastes. See Basel Action Network 'Wireless Waste: Basel Convention's Next Hazardous Waste Challenge' p. 1 at 4, available at *http://www.ban.org/basel-convention-meetings/,* accessed on 13 June 2014.

[23] See *Basel Convention – Texts and Annexes*, above (note 11) at 77.

[24] As at 6 June 2015, only 12 states have ratified the Convention. See United Nations Treaty Database Collection 'Minamata Convention on Mercury,' available at *https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-17&chapter=27&lang=en*, accessed on 6 June 2015.

[25] Article 1 of the Minamata Convention 2013.

[26] Article 11 (1), ibid.

[27] See Article 11 (3) (c) of the Minamata Convention.

Convention.[28] Such environmentally sound disposal of wastes is an integral part of the Basel Convention and is analysed below as one objective of the Basel Convention.

3.1.2 Analysing the Basel Convention's objectives and application to electronic waste

The Basel Convention 1989 is the first and the broadest international treaty to establish a control system for the transboundary movement of hazardous wastes.[29] This threefold control system obligates Parties to strict adherence through the minimisation of generation of hazardous wastes and the proximity principle, ESM of hazardous wastes, and requirement of consent for importation and exportation of hazardous wastes (which serves to restrict transboundary movements of same). This threefold obligation and its evolution over the years in relation to current e-waste management of e-waste is now analysed.

3.1.2.1 Minimisation of the generation of hazardous wastes and the proximity principle

The Basel Convention requires parties to take appropriate measures to minimise the generation of hazardous wastes, taking into consideration social, technological and economic factors.[30] Parties are also mandated to cooperate in the development and implementation of new environmentally sound technologies and the improvement of existing technologies to eliminate the generation of hazardous wastes and achieve more

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[28] See Article 11 (4) of the Minamata Convention.

[29] Katharina Kummer Piery 'The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal' (2013) 107 *Proceedings of the Annual Meeting (American Society of International Law)* 434. See also Iwona Rummel-Bulska 'Compliance and Enforcement of the Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Their Disposal' Fifth International Conference on Environmental Compliance and Enforcement at 419.

[30] Article 4 (2) (a) of the Basel Convention. See also Z Lipman 'Transboundary movement of hazardous waste: environmental justice issues for developing countries' 1999 *Acta Juridica* 266 at 272.

effective management methods.[31] This obligation of technological improvement and transfer was re-emphasised at CoP-1[32] and CoP-2[33] to the Basel Convention.

In addition to the minimisation of hazardous waste generation, parties are also required to put in place adequate disposal facilities for the ESM of hazardous waste. This should be located, to the extent possible, within the state of generation.[34] This obligation is known as the proximity principle.[35] Also, parties agree to prevent pollution from hazardous wastes and the consequences thereof on human health and the environment, and to minimise the transboundary shipment of hazardous waste.[36] This obligation to minimise the generation of the hazardous waste is important because of the continuous amounts of hazardous WEEE being generated in developed countries and shipped in large quantities to developing countries (see Chapter 1).

While the Basel Convention does not explicitly use the terms sustainable development or sustainability, several of its major provisions certainly express their spirit.[37] This is illustrated in the provisions of Article 4 (2) (a), which requires Parties to take social, economic and technological factors into consideration in minimising the generation of hazardous wastes, and thus invokes sustainable development. The juxtaposition and application of the three factors in that provision of the Convention presents a picture of sustainable management envisaged by the Convention, and highlights

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[31] Article 10 (2) (c) of the Basel Convention; Lipman, above (note 30) at 273.

[32] Decision I/17 of the First Meeting of the Conference of the Parties, Piriapolis, Uruguay, 3-4 December, 1992, available at *http://www.basel.int/TheConvention/ConferenceofthePartiesCOP/PreviousMeetings/PreviousMeetingsDocuments/tabid/2409/Default.aspx?meetingId=1&sessionId=1,* accessed on 13 July 2014.

[33] Decision II/25, Second Meeting of the Conference of the Parties in Geneva, Switzerland on 25 March 1994, available at *http://ban.org/about_basel_conv/cops2.html,* accessed on 13 July 2014.

[34] Article 4 (2) (b) of the Convention.

[35] Lipman, above (note 36) at 273.

[36] Ibid; D Hunter, J Salzman and D Zaelke *International Environmental Law and Policy* 4 ed (2011) 953.

[37] These provisions are particularly represented in the requirement of environmentally sound management of hazardous wastes. See Karin Arts and Joyeeta Gupta 'Climate Change and Hazardous Waste Law: Developing International Law of Sustainable Development' in Nico Schrijver and Friedl Weiss (eds.) *International Law and Sustainable Development – Principles and Practice* (2004) at 574, 589.

the principle of integration in the concept of sustainable development. In the broadest sense, the Convention seeks to promote sustainability in the generation, handling and disposal of hazardous waste.[38] The reality of this is highlighted below in the latter two obligations of Parties to the Convention.

3.1.2.2 Environmentally sound management of hazardous wastes

ESM appears to be the cornerstone of the Convention. It obliges Parties to ensure that the transboundary movement of hazardous wastes and other wastes is reduced in such a way that is consistent with the environmentally sound and efficient management of such wastes, and is conducted in ways that will protect human health and the environment against the adverse effects that may result from such movement.[39] Although the Convention fails to elaborate on what 'efficient management of such wastes' require, it defines ESM as 'taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner that will protect human health and the environment against the adverse effects which may result from such wastes.'[40] The inclusion of the 'all practicable steps' in the definition of ESM appears to be too broad and provides little guidance for states.[41] Perhaps, in order to correct this open-ended definition, Article 4 (8) also requires that Technical Guidelines for the ESM of wastes subject to the Convention shall be decided by the Parties at the first meeting. Technical Guidelines, though not legally binding, provide a foundation upon which countries can operate at a standard that is not less environmentally sound than that required by the Basel Convention. They seek to assist developing countries in particular, in ensuring the ESM of hazardous and other

[38] Arts and Gupta, above (note 37) at 574.

[39] Article 4 (2) *(d)*.

[40] Article 2 (8).

[41] Lipman, above (note 30) at 274.

wastes,[42] and establishing international standards for the management and disposal of each waste stream.[43]

Consequently, the Draft Technical Guidelines for the Environmentally Sound Management of Hazardous Wastes, and Framework Document on Preparation of Technical Guidelines was presented and accepted by the Technical Working Group (TWG) of the Convention at CoP-1 in Uruguay in 1992, pending the adoption of a formal document.[44] The CoP[45] extended the TWG's mandate to prepare guidelines for other priority operations and waste streams and submit the results of same to an Open-ended Ad-hoc Committee.[46]

By CoP-2, the Parties commended the work of the Open-ended Ad-hoc Committee on Technical Guidelines for the Environmentally Sound Management of Wastes and provisionally adopted three other draft guidelines on incineration, landfilling and refining oil.[47] The CoP extended the TWG's mandate to continue preparation of new Technical

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[42] Basel Convention 'Development of Technical Guidelines,' available at *http://www.basel.int/Implementation/TechnicalMatters/DevelopmentofTechnicalGuidelines/tabid/2374/Default.aspx,* accessed on 10 July 2014.

[43] Hunter *et al.,* above (note 36) at 949.

[44] UNEP/CHW.1/24 *Report of the First Meeting of the Conference of the Parties to the Basel Convention*, available at *http://www.basel.int/TheConvention/ConferenceofthePartiesCOP/PreviousMeetings/PreviousMeetingsDocuments/tabid/2409/Default.aspx?meetingId=1&sessionId=1,* accessed on 12 April 2014.

[45] The CoP to the Basel Convention reviews and evaluates the implementation of the Basel Convention, and promotes the harmonization of appropriate policies strategies and measures for minimizing harm to human health and the environment by hazardous waste and other wastes. CoP meetings are usually convened by the Basel Secretariat (UNEP). As such, decisions or resolutions taken during CoP meetings are not binding on parties to the Convention, but are merely advisory. See Basel Convention – Conference of the Parties (COP), 'Overview and Mandate,' available at *http://www.basel.int/TheConvention/ConferenceofthePartiesOverviewandMandate/tabid/1316/Default.aspx,* accessed on 17 May 2015.

[46] Ibid at 34. The CoP also noted that 'guidelines must never be regarded as providing a "once-and-for-all" indication of appropriate action and will require regular update in line with developing circumstances. Neither should they be regarded as prescriptive or a clear recommendation to use as an option in all cases. They provide background information for guidance in decision making.' See Comment b (5) – Annex to Decision I/19, ibid.

[47] The three draft guidelines were on specifically engineered landfill (D5), incineration on land (D10) and the use of oil re-refining or other re-uses of previously used oil. See UNEP/CHW.2/30, *Report of the Second Meeting of the Conference of the Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal*, 25 March 1994 at 21.

Guidelines on two priority waste streams, including recycling of metal compounds and clinical wastes.[48] Though the TWG's work has been replaced by the Open-ended Working Group to the Basel Convention since CoP-6,[49] various technical guidelines and documents on many other waste streams have been produced in order to promote and ensure the ESM of all waste streams. Consequently, CoP-5 adopted by acclamation the Basel Ministerial Declaration on Environmentally Sound Management, and Decision V/33, on Environmentally Sound Management.[50] The Declaration incorporates explicit sustainable development concerns into the Basel Convention regime.[51] The Ministers reiterate their commitment to sustainable development and full support for the implementation of the Rio Declaration and Agenda 21 for their further implementation.[52] Subsequently, they list a range of activities that should be pursued to achieve ESM, including prevention of waste, promotion of cleaner technology and production, and developing compliance mechanisms for the Basel Convention.[53] Among other items, they reiterate the need to promote 'financial and other economic instruments or concepts, with a view to identifying *sustainable* and self-sufficient solutions for the minimisation and environmentally sound and efficient management of hazardous wastes subject to the Basel Convention, bearing

[48] The first priority waste stream included physio-chemical treatment (D9), recycling/reclamation of metals and metal compounds (R4), and wastes resulting from surface treatments of metals and plastics (Y17). The second priority waste stream included clinical wastes (Y1), biological treatment (P8), use as a fuel (R1) and solvent reclamation/regeneration (R2). See Report of the Second Meeting, ibid at 21.

[49] 'Development of Technical Guidelines,' above (note 42).

[50] UNEP/CHW.5/29 *Report of the Fifth Meeting of Conference of the Parties to the Basel Convention – Advance Copy*, Basel, 10 December 1999 at para. 94, at 23, available at *http://www.basel.int/Portals/4/Basel%20Convention/docs/meetings/cop/cop5/cop5reportfinal.pdf,* accessed on 12 April 2014. The Basel Ministerial Declaration 1999 represented a committed call for action on the need for sustainable management of hazardous wastes through financial, economic and environmental instruments.

[51] See the Basel Declaration on Environmentally Sound Management of Wastes 1999, available at *http://archive.basel.int/meetings/cop/cop5/ministerfinal.pdf*, accessed on 10 July 2014; Art and Gupta, above (note 37) at 541.

[52] Paragraph 4 of the Basel Declaration, above (note 51). See also Art and Gupta, above (note 37) at 541.

[53] Para. 6 *(a)-(i),* at 1-2, Basel Declaration.

in mind that such instruments should be affordable and socially acceptable, as well as economically viable.'[54]

Although it is noteworthy that the Ministerial Declaration incorporates explicit sustainable development concerns into the Basel Convention, the reiteration and allusion to the identification of sustainable solutions should have included the words 'to the extent possible' because the criteria for affordability and social acceptability of international instruments would be different for developed vs developing countries.

However, at CoP-6, electronic waste was identified as a 'priority waste stream' in the Strategic Plan for the Implementation of the Basel Convention.[55] A high-powered Ministerial roundtable to the Convention described e-waste as an issue to be tackled by Parties to the Basel Convention.[56] The round table recognised the importance of ESM and control of transboundary movement of EEE, and emphasised the need for concrete, cooperative actions to be taken by all stakeholders – including governments, manufacturers, service providers and consumers – to ensure proper collection, treatment and recycling of valuable materials as well as the disposal of EOL EEE.[57]

While these first two objectives of the Basel Convention are significant, the third appears to be the weightiest, particularly concerning the trade in e-waste, and is referred to as the PIC procedure.

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[54] Para. 1 *(a),* at 2-3.

[55] Decision VII/1, *Strategic Plan for the Implementation of the Basel Convention to 2010* in *Decisions Adopted by the Conference of the Parties to the Basel Convention at its seventh meeting* – Geneva, 25-29 October 2004, at 149, 152. This Plan gives further effect to the Basel Declaration 1999.

[56] The high-level roundtable discussion on the environmentally sound management of electrical and electronic wastes held on 12 December 2002.

[57] UNEP/CHW.6/40 *Report of the Conference of Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and Their Disposal,* Sixth Meeting, Geneva, 9-13 December 2002 at 30.

3.1.2.3 The requirement of prior informed consent in the transboundary movement of hazardous wastes

The Convention was the first body to put together a hazardous waste import and export control system by developing PIC protocols for the import, transit and export process.[58] The PIC requirement has been described as 'simply an expression of the sovereignty of a State over the use of its territory and resources. It is this which differentiates transboundary disposal of wastes from the use of common spaces or shared resources.'[59]

The Convention expressly requires Parties to prohibit the export of hazardous wastes and other wastes if the importing state does not consent in writing to the specific importation, especially in a case where importing state has not prohibited the importing of such wastes.[60] The Convention defines an *exporter* as any person under the exporting state's jurisdiction who arranges for hazardous wastes or other wastes to be exported. The definition of an *importer* is similar in form and content,[61] while a *generator* refers to any person whose activity produces hazardous wastes or other wastes, or if that person is not known, the person who is in possession and/or control of those wastes.[62]

The PIC is encapsulated in Articles 6 and 7 and in Annex V (A) of the Convention. The exporting state, generator or exporter must notify the states concerned in writing of any proposed transboundary movement, including the information specified in Annex V (A).[63] The importing state responds by giving its consent with or without conditions, denying permission or requiring additional information, and no transboundary movement may commence until the exporting state has received written consent from the importing state and confirmation from that state of the existence of a contract between the exporter

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[58] Salehabadi, above (note 17) at 10.

[59] Patricia Birnie and Alan Boyle *International Law and the Environment* 2ed (2002) 432.

[60] Article 4 (1) *(c)*.

[61] Article 2.15 & 2.16.

[62] Article 2.18.

[63] Article 6. 1; Sands, above (note 11) at 693.

and the disposer specifying ESM of the wastes.[64] Transit states that are Parties to the Convention are also required to prohibit transit passage, and the exporting state must not allow transboundary movement to commence until it has written consent from the transit state.[65] The Convention also allows for general notifications and consents to cover a 12-month period in which wastes with the same characteristics are shipped regularly to the same disposer via the same exit office or transit state.[66] Importing states and transit states shall also ensure that any transboundary movement of hazardous wastes is covered by insurance, bond or other guarantee in case of any mishap during the transport of such wastes.[67] However, in the event that a transboundary movement of hazardous waste cannot be completed in accordance with the terms of the contract, the exporting state must take back the wastes if alternative arrangements cannot be made for their disposal in an environmentally sound manner.[68]

Illegal traffic in hazardous wastes is regarded as a criminal offence under the Convention.[69] Thus, the transboundary movement of hazardous wastes without

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[64] Article 6 (2) and (3); Sands, above (note 11) at 693.

[65] 'State of Transit' refers to any state, other than the state of export or import, through which a movement of hazardous wastes or other wastes is planned or takes place. See Article 2 (12) and Article 6 (4); Sands, above (note 11) at 693.

[66]Article 6 (6)-(8); Sands above (note 11) at 693.

[67] Article 6 (11). In addressing liability for damage resulting from the waste trade, Article 12 of the Convention directs parties to prepare a protocol establishing appropriate rules and procedures for compensation for damage resulting from the trade in hazardous wastes. The Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal was adopted at CoP-5 in 1999. It applies only to damage resulting from the transboundary movement and disposal of waste (Article 3 (1)-(6)). No single operator is liable at all stages, nor is the generator always liable. Rather, generators, exporters, importers and disposers are all potentially liable at different stages of the wastes' journey to its eventual destination. During export and transit, the person (generator or exporter) who notifies the states concerned of proposed transboundary movement of waste will be liable; and the ultimate disposer of the waste assumes liability once the possession is transferred (leaving the shipper and the importer free from liability). Liability under the protocol is strict, subject to a limited range of defences and additional fault-based liability rests on any person who fails to comply with laws implementing the Basel Convention or whose wrongful, intentional, reckless or negligent acts or omissions have caused the damage. (Article 4 and 5) Liability is joint and several where several parties are also liable (Article 4 (6). As at 11 July 2014, the Protocol has 13 parties and is not yet in force. See Birnie & Boyle, above (note 59) at 435; Hunter *et al.,* above (note 36) at 961-963.

[68] Article 8; Sands, above (note 11) at 693.

[69] Article 4 (3).

notification, or via consent obtained through falsification, misrepresentation or fraud, or deliberate disposal (e.g. dumping) in contravention of general principles of international law, constitutes illegal traffic.[70] The PIC requirement is enforceable in two ways. First, by making the exporting state accept the return of illegal waste where practicable, or where the importer is at fault, imposing on the importing state a duty to ensure safe disposal of the waste.[71] Second, by ensuring that states punish illegal traffic as a criminal offence,[72] which would provide an additional enforcement mechanism where the exporting state's procedures were lax or inadequate.[73]

The enforceability of the PIC requirement, i.e. making the exporter accept the return of illegal waste, is representative of the environmental element of sustainable development and the PPP embedded in EPR. It ensures that the exporter of illegal waste carries some form of legal responsibility and serves as a deterrent to the exporter/polluter in the same vein. The additional requirement of mandating the importing state to ensure safe disposal of waste further suggests that, in the negotiations leading to the adoption of the Convention, Parties may have unwittingly foreseen the need for sustainable management of hazardous e-waste, even though the word sustainable is not expressly used in this part of the Convention.

While the enforceability of the PIC procedure is key to the e-waste trade, it requires concerted and strict enforcement at the national level. The PIC requirement is detailed under the Convention, but leaves much to be desired. There is no requirement for the exporting state to verify the contents of the contract concluded between the exporter and the disposer; the transaction may commence on the basis of mere confirmation of its existence.[74] The PIC requirement also fails to ensure that the exporting country properly

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[70] Article 9 *(a)-(e).*

[71] Article 9 (4); Birnie & Boyle, above (note 59) at 432.

[72] Article 4 (3) and (4); Article 9 (5).

[73] Birinie and Boyle, above (note 59) at 432.

[74] Katharina Kummer 'The International Regulation of Transboundary Traffic in Hazardous Wastes: The 1989 Basel Convention (1992) 41 (3) *The International and Comparative Law Quarterly* 530 at 548.

verifies that adequate waste management facilities are available in the importing country.[75] Although the Convention obligates the importer and exporter to ensure the availability of such facilities in the country of disposal, it does not prescribe a particular process by which this information is to be ascertained.[76] The Parties are therefore reliant on the Convention's exchange of information provisions, which means that the exporter is relying on representations made by the authorities in the importing country.[77] In addition, by placing responsibility on the authorities within developing countries to verify the adequacy of disposal facilities, the PIC procedure is vulnerable to abuse by corrupt officials.[78] Thus, while the sovereignty of nationals to refuse imports of wastes is embodied in the Convention, in reality, governments may surrender this sovereignty where the economic incentives are sufficiently high.[79] In such circumstances, the PIC procedure is powerless to prevent government officials from knowingly overstating their capacity to cope with hazardous waste imports in order to secure vital revenue.[80] In sum, the PIC procedure has been viewed as 'an open licence by developed countries to export hazardous wastes to developing countries.'[81]

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[75] Alan Andrews, 'Beyond the Ban – Can the Basel Convention Adequately Safeguard the Interests of the World's Poor in the International Trade of Hazardous Waste?' (2009) 5 (2) *Law, Environment and Development Journal* 169 at173.

[76] Article 4 (b) of the Convention, Andrews, above (note 75) at 173.

[77] Andrews, above (note 75) at 173.

[78] Ibid.

[79] Ibid at 174.

[80] Ibid. In fact, Basel's notification and consent procedure did not improve knowledge about the hazardous waste trade because, among others, notifications for hazardous waste transfers (and responses to those notifications) did not flow through the Secretariat and so no accurate picture of the situation was developed at its inception. See J. Krueger 'Prior Informed Consent and the Basel Convention: The Hazards of What Isn't Known', (1998) 7 (2), *Journal of Environment Development* pp. 115-137 at 134; J S Applegate 'The taming of the precautionary principle' (2002) 27 *Wm & Mary Envt'l L & Pol'y Rev* 13, 40. See also Onzivu, above (note 1) at 637.

3.1.3 Critique of the PIC procedure and the Basel Convention

One of the Convention's objectives was to make the movements of hazardous waste so costly and difficult that industry will find it more profitable to cut down on waste production.[82]

Unfortunately, while the Convention represents a landmark beginning, it is not a complete safeguard. It involves weak monitoring of hazardous waste trade to developing countries and only requires PIC to be obtained with the signature of just one government official.[83] The Convention's fundamental failure is that it does not recognise the unique pressures that the drive for economic development, lack of institutional capacity and endemic corruption places on developing countries. Self-verification is highly vulnerable to abuse and incompetence and therefore frequently makes a mockery of the concept of PIC.[84] Arguably, the need to minimise the generation of hazardous waste is not only the greatest failing of the Basel Convention to date, but also a glaring failure of developed countries that continue to produce even more waste every year, and have not managed to decouple economic growth from waste generation.[85]

Conversely, Toepfer points out the positive aspects of the Convention:

> The Basel Convention, is a suitable legal basis for important trade-related decisions, far from any green protectionism – quite the contrary – but for banning the export of risks and enjoying the

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[82] Alexandre Kiss and Dinah Shelton *Guide to International Environmental Law* (2007) at 212.

[83] Paul E Rosenfeld and Lydia G H Feng *Risks of Hazardous Wastes* (2011) at 174.

[84] Andrews notes that these procedural weaknesses are exacerbated by the Convention's weak institutions. Constitutionally impotent and financially under-resourced, the Compliance Committee lacks both the mandate to enforce implementation of the Convention and the capacity to adequately facilitate compliance by parties. He reiterates that the Basel Convention Regional Centres (BCRCs) are unable to ensure the transfer of technology to developing countries to build their capacity to manage hazardous waste. (This was amended in Cop-6, at Geneva in 2002 when the relationship between the Basel Convention and the BCRCs was finally formalised legally through the drafting of a Framework Agreement. Annexed to this agreement is a list of core functions of the BCRCs.) He also opines that the fact that the liability protocol has not yet come into force means that there is no mechanism for ensuring that the exporting state pays compensation for damage caused by exports of hazardous waste. Alan Andrews, above (note 75) at 178. See also Birnie and Boyle, above (note 59) at 438; 'Report on the 6th Conference on the Parties of the Basel Convention , 9-14 December 2002' Prepared by the Basel Action Network, 3 February 2003 at 6, available at *http://www.ban.org/basel-convention-meetings/,* accessed on 5 July 2014.

[85] Basel Action Network – COP 8 Newsletter at 5.

> advantages of economic growth at home. This Convention proves that the precautionary principle is a valid and necessary criteria – a criteria not misused as an alibi to avoid scientific research concerning the risks linked with substances and products, as we widely singled out with a list of hazardous wastes, but as a basis for early action… This Convention, the Basel Convention, proved and will have to prove in the future even more – that globalization must necessarily be combined with a new culture of solidarity, with a respect for regional identities, and with cooperation for mutual benefits.[86]

The Basel Action Network (BAN) also lends support to the above assertion:

> … Any action that would allow the Basel Convention to fall into an historical abyss would represent a serious contractual breach with future generations. It would represent a turning back the clock on progress toward a more *just and sustainable world*[87] and leave our children with a far uglier and polluted one. Certainly at a time in history, when we currently face the single largest defined flow of hazardous waste which daily inundates developing countries around the world from the export of toxic electronic waste, the Basel Convention must be seen as not only a landmark but a beacon for vigorous future action.[88]

BAN's reference to the need for a more 'just and sustainable world' could be regarded as a representation of the fact that the concept of sustainable development permeates every aspect of daily life and global environmental management. It represents a clarion call to developed and developing countries to apply the Convention to hazardous waste management for the benefit of future generations. Additionally, the Basel Convention's recognition that the generator[89] should carry out 'duties with regards to the transport and disposal of hazardous wastes… in a manner that is consistent with the protection of the environment, whatever the place of disposal,'[90] is suggestive. It can be implied that this

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[86] UNEP Executive Director Klaus Toepfer's Speech at the Ministerial Segment of the 5th Conference of the Parties to the Basel Convention, Basel, Switzerland, 9 December 1999, available *http://www.ban.org/basel-convention-meetings/,* accessed on 13 July 2014.

[87] Emphasis mine.

[88] Basel Action Newsletter, COP 10 Newsletter, at 6.

[89] A generator is defined as 'any person whose activity produces hazardous wastes or other wastes or, if that persons is not known, the person who is in possession and/or control of that waste.' See Article 2.18 of the Basel Convention.

[90] Para 5 of the Preamble to the Basel Convention.

provision may have spurred past and current discourse regarding EPR and the EPR matrix (described in Chapter 2) in a bid to place responsibility for final disposal of hazardous waste products on producers or other stakeholders, as the case may be.

Therefore, despite the criticisms and innovations of the Convention, it cannot be refuted that the PIC procedure provides an international control mechanism for the trade in hazardous waste between developed and developing countries. Though the requirements of the procedure still contain some loopholes that may have facilitated the e-waste trade in recent times, it behoves Parties to enforce the PIC requirements by domesticating the Convention at the national level, in line with e-waste policy in place in their jurisdiction. It is this wide discretionary power granted to Parties to the Convention to adopt necessary procedures and requirements for the control of transboundary movement of hazardous wastes that informs a country's regulations on the management of e-waste. This authority behoves them to adopt all necessary means to ensure that the spirits and tenets of the Convention are represented in attendant legislation. This is the motivation for which the EPR principle should be adopted at the national level for effective e-waste management, the application of which is examined in the South African and Nigerian contexts in the subsequent chapters of this thesis.

Despite this creditable course charted by the Basel Convention for enforcement at the national level, it soon became clear after the Convention came into force in 1992 that its requirements were not sufficient to prevent the continuous trade in hazardous waste from developed to developing countries. The Parties to the Convention recognised that, rather than allowing the Convention to fall into a 'historical abyss,'[91] a stricter ban on the trade in hazardous waste was required in order to protect developing countries. As a result, the Basel Ban was adopted.

3.1.4 The Basel Ban Amendment

Restricting the transboundary movements of waste between developed and developing countries was hotly debated during the original negotiations of the Basel Convention. The compromise reflected therein was the PIC procedure, with the possibility of implementing

[91] Basel Action Newsletter, COP 10 Newsletter, at 6.

a total ban in future CoPs.[92] Immediately after the Convention came into force in May 1992, Parties began to push for a more stringent option to completely stop the trade in hazardous wastes between developed and developing countries. At the first meeting of the Conference of Parties (CoP-1) in 1992 in Paraguay, the Parties adopted a Decision requesting 'the industrialized countries to prohibit transboundary movements of hazardous wastes and other wastes for disposal to developing countries.'[93] The Decision also requested 'developing countries to prohibit the import of hazardous wastes from industrialized countries.'[94] At the Second Meeting of the Conference of the Parties (CoP-2) in March 1994, Geneva, parties agreed to an immediate ban (the Basel Ban) on the export from OECD to non-OECD countries[95] of hazardous wastes intended for final disposal.[96] They also agreed to ban, by 31 December 1997, the export of wastes intended for recovery and recycling.[97]

This particular decision to ban the export of wastes intended for recovery and recycling is important, because the environmentally friendly word *recycling* was being increasingly used by waste traders to justify the export of hazardous waste from rich to

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[92] Hunter *et al.,* above (note 36) at 960. It should be noted that international legal scholars who have examined the legal status of decisions of CoPs find that such decisions lack clearly binding character under international law. Hence, there appears to be a general ambiguity over the binding nature of CoP decisions, with political pressure being the main reason why most CoP decisions are implemented. See Thomas Gehring, 'Treaty-Making and Treaty Evolution' in Daniel Bodanski, Jutta Brunee and Ellen Hey *The Oxford Handbook of International Law* (2007) 491; Robin R Churchill and Geir Ulfstein 'Autonomous Institutional Arrangements in Multilateral Agreements (2000) 94 *AJIL* 639; 'COP Decisions: Binding or Not?,' *CAN Ad-Hoc Legal Working Group*, June 8 2009, available at http://www.climatenetwork.org/sites/default/files/COP_Decisions_CAN_legal_group_June_8_09.pdf, accessed 08 December 2015.

[93] Decision I/22, para. 1, in *Report of the First Meeting,* above (note 44) at 36-37.

[94] Para. 5, ibid.

[95] The change in terminology from developing countries to non-OECD countries was significant because the ban now unequivocally also covered states in Central and Eastern Europe. Previously, this was not watertight. See Arts and Gupta, above (note 37) fn. 74 at 538.

[96] Decision II/12, Para. 1, at in Report of the Second Meeting, above (note 53) at 20. See also Kiss and Shelton, above (note 82) at 213.

[97] Para. 2, ibid. See also Kiss and Shelton, above (note 82) at 230.

poorer countries.[98] The waste trade for the recycling of waste (including electronic waste at present) as witnessed in developing countries can either be 'sham recycling' (where wastes are not recycled at all, but are simply burnt and dumped) or 'dirty recycling' (which involves polluting operations that jeopardise the health of the importing country's populace and environment (e.g. the Nigerian Koko Toxic Dump incident highlighted in Chapter 1).[99] Therefore, both of these recycling scenarios involves a transfer of pollution from rich to poor countries.[100]

BAN sheds light on two fundamental reasons why the OECD/non-OECD distinction is an essential foundation for the Basel Ban. First, it notes that the OECD group is disproportionately responsible for a global problem (hazardous waste generation) and possesses a disproportionate capability (wealth) to solve that problem at home, as required by the Basel Convention (Article 4, 2, (a), (b) and (d)). Secondly, BAN opines that the OECD is comprised of a group of countries whose legal obligations and membership is not self-elective but based on economic and infrastructural criteria. It notes that the 'rigidity and economic basis of OECD membership provides an enforceable safeguard against a regime where countries, on the basis of unenforceable criteria, can opt in, or out of the ban. An 'opt-out' ban is not a ban at all.'[101]

However, a debate ensued as to whether the ban was legally binding on the Parties, since it was not formally incorporated into the Convention.[102] This debate was resolved at

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[98] Recently, however, we have witnessed a frightening 'turning away' from the original intent of the Basel Convention by powerful industrial interests and an effort to twist the Convention into becoming a facilitator of transboundary movements (TBM) of waste as long as recycling is claimed as environmentally sound management (ESM). However, this is not what the Basel Convention envisaged, nor is it embodied in the Convention's text. Basel Action Network 'Hazardous Waste Recycling: No Justification for Toxic Trade' Briefing Paper 7, October 2004 at 1, available at *http://www.ban.org/library-page/*, accessed on 15 June 2014.

[99] Ibid.

[100] Ibid.

[101] Basel Action Network 'Annex VII Expansion? – An Ignoble Attempt to Undo the Basel Ban' Briefing Paper No. 3, May 1999, available at *http://ban.org/library/briefing3.html,* accessed on 13 May 2014.

[102] Supporters of the ban argue that the COP decision constitutes a legally binding decision: 'decision II/12 stands on its own and is written in the strongest legal terms short of an amendment. (…) [A]mendment will not replace Decision II/12, but will enshrine it within the formal Convention itself, strengthen it and protect it against future attempts at sabotage.' Opponents of the ban claim that the 1994 COP decision formally has no binding force, but, at best, has moral value. From an international law point of view, the matter is indeed

the third meeting of the Conference of the Parties (CoP-3), Geneva in September 1995. The Conference incorporated the ban as a formal amendment to be incorporated into the Basel Convention. This Decision III/I, incorporating the ban, involved inserting a new preambular paragraph 7A, recognising that 'transboundary movements of hazardous wastes, especially to developing countries, have a high risk of not constituting an environmentally sound management of hazardous wastes as required by this Convention.'[103] A new article 4A confirms the 1994 Basel Ban Decisions (by creating a new Annex VII)[104] but now prohibits hazardous waste export between Annex VII (members of OECD, EC and Liechtenstein) and non-Annex VII states.[105] The Ban was expected to enter into force on receipt of the 62nd instrument of ratification (i.e. three quarters of the Parties present at CoP-3). In fact, at CoP-4 in 1998, a 'strong appeal' was made to the Parties to ratify the Basel Ban to enable it to come into force as soon as possible.[106] It was also decided that membership of Annex VII would remain unchanged until the Basel Ban came into force.[107] However, as at June 2015, with 81 ratifications,[108]

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not fully clear. See cf, above (n 91); Greenpeace, 'The Basel ban – The pride of the Basel Convention: An update on implementation and amendment – September 1995' in Arts and Gupta, above (note 43) at 539. See J Puckett, 'The Basel Ban: A triumph over business-as-usual', available at *http://ban.org/about_basel_ban/jims_article.html,* accessed on 10 June 2014; Art and Gupta, above (note 43) at 538-39; Sands, above (note 23) at 694.

[103] Para. 3, Decision III/I, 'Amendment to the Basel Convention' in *Decisions Adopted by the Third Meeting of the Conference of Parties to the Basel Convention,* UNEP CHW.3/35, 18 September 1995 at 2.

[104] Arts and Gupta, above (note 37) at 539.

[105] Ibid at 539-540.

[106] Para. 3, Decision IV/7, *Implementation of Decision III/I,* in *Report of the Fourth Meeting of the Conference of Parties to the Basel Convention,* UNEP/CHW.4/35, Kuching, 25 February 1998 at 17. It should be noted that COP 4, Decision IV/6 also adopted two new waste lists (A and B), which includes certain components of e-waste as stated above.

[107] Para. 1, Decision IV/8, *Decision Regarding Annex VII*, ibid at p. 17. It must be noted that none of the Basel ban decisions refers explicitly to sustainable development or sustainability. See Schrijver & Weiss, above (note 37) at 579.

[108] See UN Treaty Collections Database '3.a Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Geneva 2 September, 1995,' available at *https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-3-a&chapter=27&lang=en,* accessed on 12 July 2014.

the Basel Ban is not yet in force. The reason for this and the purposes and intent of the Basel Ban in relation to e-waste is now examined.

3.1.4.1 The implications of the Basel Ban Amendment on trade in e-waste management

The Basel Ban is a logical extension of the Convention and was envisaged in the Convention.[109] It became necessary when it was revealed that the elective waste trade regime based on PIC was ineffective in the face of the enormous economic pressures of the global waste trade.[110] The Basel Ban was justified by the Basel Parties on the basis 'that transboundary movement of hazardous wastes from OECD to non-OECD countries have a high risk of not constituting environmentally sound management of hazardous wastes as required by the Basel Convention.'[111] This determination was not only a result of the obvious lack of adequate technical capacity to manage hazardous wastes in most developing countries but, more importantly, because exporting pollution to avoid higher costs always works at cross purposes to the primary goals of the Basel Convention: a) the minimisation of hazardous waste generation, b) national self-sufficiency in hazardous waste management, and c) the minimisation of the transboundary movement of hazardous wastes.

Thus, the Basel Ban is seen as vital for two primary reasons. First, to prevent damage to the environment and human health caused by the disproportionate export and disposal of hazardous wastes to countries that did not create them and where there was less infrastructure and resources to mitigate the significant risks associated with such wastes. Second, to prevent waste generators from avoiding responsibility to minimise the generation of hazardous wastes via clean production technologies and methods, by externalisation of their costs to countries where disposal is less costly than at home.[112]

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[109] Article 15 (7) requires the COP to undertake, three years after the Convention and at least every six years thereafter, 'an evaluation of its effectiveness and, if deemed necessary, to consider the adoption of a complete or partial ban of transboundary movements of hazardous wastes and other wastes…'

[110] Annex VII Expansion – An Ignoble Attempt to Undo the Basel Ban 'Updated Briefing Paper 3, October 2004 at 2, available at *http://ban.org/library/briefp3.pdf,* accessed on 16 July 2014.

[111] BAN 'The Basel Ban – A Triumph for Global Environmental Justice' Briefing Paper No. 1, May 1999, available at *http://ban.org/library/briefing1.htm*, accessed on 18 June 2014.

[112] BAN 'Basel Ban Amendment: In the Final Stretch' updated Briefing Paper 4, October 2004, available at *http://www.ban.org/basel-convention-meetings/*, accessed on 16 June 2014.

BAN describes the Basel Ban as a 'legal landmark' and 'an instrument for global environmental justice' owing to its far-reaching significance.[113] The Basel Ban's great environmental significance was its recognition that the recycling of wastes, and in particular hazardous waste, represents a perpetuation of the waste crisis and a further excuse for unsustainable consumption and wastefulness.[114] It represents a show of solidarity among developing nations to 'bridle the excesses of richer, more powerful countries for the sake of the global environment.'[115] It also recognised the adoption of the Basel Ban as a legally binding instrument in a political climate of deregulation and voluntary agreements and despite total opposition by powerful nations such as the U.S., the UK, Germany, Australia, Canada, Japan and France,[116] it exemplified the unwavering determination of developing countries to halt the waste trade.

BAN also notes that the forces that drive the international waste trade have increased in recent years.[117] It highlighted recent revelations of massive dumping of post-consumer waste electronics, cell phones and toxic waste ships, making it clear that the Ban is more relevant now than ever.[118] BAN expressed concerns over electronic waste management, describing the dumping of e-waste as an 'epidemic.'[119] It states that one cannot ignore the fact that 'the most horrific examples of the waste crisis are as a result of transboundary movements of electronic waste most of which are illegal and most of which are exported from the United States.' In fact, the eighth meeting of the Conference of

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[113] BAN 'The Basel Ban – A Triumph for Global Environmental Justice' above (note 111).

[114] Ibid.

[115] It must be noted that the Basel Ban was an initiative launched, sustained and won by the G-77 group of developing countries (initially led by the African Group). It was this group of countries, with China, that provided the moral backbone. They were soon joined by allies in West and East European countries. See BAN 'The Basel Ban – A Triumph for Global Environmental Justice' above (note 111).

[116] Ibid.

[117] These forces include: the disparity in global wealth (the rich getting richer and the poor poorer), rising amounts of hazardous waste generation and increasing disposal costs in developed countries. See BAN – In the Final Stretch, above (note 110) at 2.

[118] Ibid.

[119]Basel Action Network 'Intervention on e-waste,' 24 June 2008, available at *http://ban.org/library/080624_BAN_intervention_on_e-waste.html*, accessed on 28 June 2014.

Parties (CoP-8) in 2006 in Nairobi, Kenya designated e-waste as the theme of the COP, and adopted a Decision to create innovative solutions for the ESM of electrical and electronic waste.[120] The Decision '[took] into account, the importance of waste minimization, product stewardship, extended producer responsibility, reduction of transboundary movements and the environmentally sound management of electrical and electronic waste (e-waste).'[121] It may be argued that the COP's recognition of both environmental policy tools of EPR and PS indicated the growing cognisance at the time that EPR and PS may be applied independently or jointly to achieve the ESM of e-waste. Additionally, it proposed the development of a work plan for e-waste management under the Convention, including the development of technical guidelines for the ESM of e-waste.[122] The Decision 'strongly encourages' Parties to develop further strategic partnerships targeting e-waste[123] and encourages them to take a life-cycle approach and to promote clean technology and green design for electrical and electronic products, including the phasing out of hazardous substances used in production and included in equipment.[124] The technical guidelines and the documents arising from these partnerships on e-waste management are discussed later in this chapter.

BAN notes that these proposed strategies suggested at CoP-8 that seeks to 'fixate on end-of-pipe management and ignore the trade drivers' amounts to a misguided diversion, blaming the victims and failing to attack the source.[125] Although much of the world lacks adequate capacity to properly manage hazardous e-waste, it must be remembered that a free trade in such e-wastes outside of the intended restraints of Basel

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[120] Decision VIII/2, 'Creating Innovative Solutions through Basel Convention for the Environmentally Sound Management of Electrical and Electronic Wastes' in *Report of the Conference of the Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal at its eight meeting,* UNEP/CHW.8/16, Nairobi, Kenya on 27 December 2006 at 24.

[121] Preamble to Decision VIII/2, ibid.

[122] Paragraph 3 (a), Decision VIII/2, ibid.

[123] Para. 4, ibid, at 25.

[124] Para. 8, ibid at 25.

[125] COP 8 Newsletter, above (note 85) at p. 8.

creates an incentive for the existence of dirty recycling operations.[126] BAN further reiterates that the exporting of e-waste under the guise of re-use to bridge the 'digital divide' and satisfy the great desire and need in the developing world to become a part of the information age via access to information technology must be stopped,[127] because when waste trade is not controlled, a comparative advantage can be gained by managing hazardous waste in cheap and dirty ways.[128] It therefore urged all countries to ratify the Basel Ban and to apply it to toxic electronics[129] in order to discourage further e-waste trade. This urgent call was reiterated by BAN because, by November 2006, 11 years after the Basel Ban was adopted as a legally binding decision, 26 (Annex VII) countries and 36 non-Annex VII countries (including Nigeria) had ratified the Basel Ban.[130] The 62 ratifications required for the Basel Ban to come into force had been achieved by 2006, but its coming into force has been stalled and held hostage by a very small minority of countries that have seized upon ambiguous text in the Basel Convention on how amendments are to come into force.[131] These countries have exploited the confusion in the text by proposing methods of coming into force that will forestall the Ban for many decades, owing to uncertainty as to how to interpret the Convention.[132] Puckett

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[126] Ibid.

[127] BAN 'Preventing the Digital Dumping: Ending "Re-Use Abuse" Briefing Paper 10, November 2006 at 1, available at *http:///ban.org/library/B10_11_06.pdf,* accessed on 11 July 2014.

[128] COP 8 Newsletter, above (note 85) at 8.

[129] Ibid.

[130] BAN 'The Basel Ban Amendment: Entry Into Force = Now!' Briefing Paper 4, November 2006 at 1, available at *http://ban.org/library/BP4_11_06.pdf*, accessed on 10 June 2014.

[131] This ambiguity stems from the wording of Art. 17 (5). It provides that 'instruments of ratification, approval, formal confirmation or acceptance of amendments shall be deposited with the Depositary, Amendments adopted… shall enter into force between Parties having accepted them on the ninetieth day after the receipt by the Depositary of their instrument of ratification, approval, formal confirmation or acceptance by at least three-fourths of the Parties who accepted them or by at least two thirds of the Parties to the protocol concerned who accepted them, except as may otherwise be provided in such protocol, The amendments shall enter into force for any other Party on the ninetieth day after that Party deposits its instrument of ratification, approval, formal confirmation or acceptance of the amendments.' See also COP 10 Newsletter, above (note 88) at 2.

[132] BAN Press Release '178 Countries Agree to Let the Ban on Exports of Toxic Wastes to Developing Countries Become Law' Cartagena, Colombia, October 21, 2011 – at 1, available *at http://www.ban.org/wp-content/uploads/2011/10/COP_10_PR_A4.pdf*, accessed on 17 June 2014.

condemned the inability of the Ban to come into effect and stated that *'the Convention risks becoming a paper tiger if its Parties cannot implement and enforce its own rules.'*[133]

At the ninth meeting of the CoP (CoP-9) in 2008, the President[134] initiated a process to facilitate the achievement of the objectives of the Basel Ban.[135] At the CoP, Swiss and Indonesian governments proposed an open dialogue diplomatic process known as the Country Led Initiative (CLI). The CLI was an effort to break the deadlock, resolve ambiguity in the text, and to finally allow for the Ban to come into force expeditiously.[136] This process has now concluded, and the resulting product is a large draft decision adopted at CoP-10 in 2011 called the Draft Omnibus Decision,[137] which calls for a 'fixed-time approach' as well as continued dialogue and work on guidelines and standards.[138] This

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[133] *Basel Action Network Press Release 'United Nations Waste Treaty Postpones Long Awaited Toxic Waste Dumping Ban' 27 June 2008, Bali, Indonesia, available at http://ban.org/ban.../080627_un_waste_treaty_postpones_dumping_ban.htm,* accessed on 01 July 2014.

[134] The President, nine Vice-Presidents (one of whom will serve as Rapporteur) are elected by the Conference of Parties at each ordinary meeting of the Parties to the Basel Convention. Together, these members comprise a Bureau, and shall commence their terms of office at the closure of the meeting at which they are elected and remain in office until the closure of the following ordinary meeting of the CoP. See Basel Convention website 'Bureau of the Conference of the Parties,' available at *http://www.basel.int/TheConvention/ConferenceoftheParties/Bureau/tabid/2282/Default.aspx*, accessed on 27 April 2015.

[135] Following the adoption of decision IX/25 on addressing the interpretation of para. 5 of Article 17 of the Basel Convention, the President introduced a proposal, in the form of a statement, on a possible way forward on the Ban Amendment. He explained that his intention was to try to break the deadlock that for many years had prevented progress concerning the issue. He also explained that, in preparing his statement, he had worked in close consultation with many delegations during the course of the meeting. Accordingly, the Conference adopted a decision acknowledging the President's statement on a possible way forward on the Ban Amendment and inviting parties to give due consideration to the proposed way forward. The decision as adopted is set out as decision IX/26 in annex I to the COP 9 Report. In this regard, the representative from Switzerland announced that Indonesia and Switzerland has agreed to organise jointly an activity to seek to advance progress in the context of the President's statement. See Para. 70 and 71, *Report of the Conference of the Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal at its ninth meeting,* UNEP/CHW.9/39, Bali, Indonesia at p. 12, 50-52. See also Onzivu, above (note 1) at 641-42. It should also be noted that at COP 9, the Basel Ban already had 70 ratifications.

[136] COP 10 Newsletter, above, (note 88) at 2.

[137] Ibid.

[138] BAN 'The Basel Ban Amendment: Just Say Now' Briefing Paper 4, April 2013 at 1-2, available at *http://www.ban.org/wp-content/.../2013/04/BP4_April_2013_Final_Letter.pdf,* accessed on 16 July 2014.

'fixed time' approach interpretation of Article 17, paragraph 5,[139] would allow for the Amendment to come into force swiftly.[140] By April 2013, BAN estimated that 51 of thse countries that were parties to the Basel Convention in 1995 when the Ban Amendment was adopted had ratified the Basel Ban. Thus, for the Basel Ban to come into force in line with the fixed-time approach, 15 more instruments of ratification, approval or acceptance were needed.[141] BAN also estimated in 2011 that this feat could be achieved in two to three years.[142]

Notwithstanding the CLI's objective in ensuring the entry into force of the Basel Ban, e-waste was discussed in the CLI as a typical trade item where ESM in importing countries cannot be assured.[143] It was also noted at CoP-10 that the Basel Ban covered only traditional forms of waste and not, for instance, near-EOL second-hand goods such as computing equipment (including charitably donated goods, or goods ostensibly being shipped for repair). Thus, there was a need for this issue to be addressed through the CLI including take-back schemes for computer equipment and clear definitions pertaining to

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[139] The fixed time approach under Decision BC – 10/3 requires that para. 5 of Article 17 of the Basel Convention should be interpreted to mean that the acceptance of three-quarters of those parties that were parties at the time of the adoption of the amendment in 1995 is required for the entry into force of such amendment. See Para. 56 of *Report of the Conference of the Parties to the Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal on its tenth meeting,* UNEP/CHW.10/28, 17-21 October 2011, Cartagena, Colombia at 8. See also Para. A (2), Decision BC-10/3 'Indonesian-Swiss country-led initiative to improve the effectiveness of the Basel Convention' at 31 of the Report.

[140] BAN 'The Basel Ban Amendment: Just Say Now,' above (note 138) at 1-2.

[141] This was communicated to the Conference of Parties at COP 11 via the United Nations Office of Legal Affairs reproduced in document UNEP/CHW.11/INF/34. See para. 24, *Report of the Conference of the Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal at its eleventh meeting,* UNEP/CHW.11/24, Geneva, 28 April-10 May 2013 at 5. See also 'The Basel Ban Amendment: Just Say Now,' above (note 138) at 1-2.

[142] BAN Press Release, above (note 133) at 1.

[143] Analysis of the problem in developing countries, documents of the first meeting of the CLI in Indonesia, 15-17 June 2009, Geneva, Switzerland: Country-Led Initiative, UNEP 2009, available at *http://www.basel,int/convention/cli/index.htm*, accessed on 19 January 2010. UNEP; 'Possible elements of a way forward to address the objective of the CLI: Documents of the third meeting of the CLI in Geneva, March 2010. Geneva, Switzerland: CLI, UNEP, 2009, in Chika Aoki-Suzuki, Magnus Bengtsson, and Yashuhiko Hutta, 'Controlling Trade in Electronic Waste – An Analysis of International Agreements and National Policies in Asia' in Klaus Hierynomi, Ramzy Kahhat and Eric Williams (eds.), *E-waste Management – From Waste to Resource* (2013) at 170, 183, 184.

second-hand goods.[144] However, CoP-11 failed to reach agreement on the distinction between used/second-hand goods and the distinction between waste and non-waste.[145] CoP-11 adopted a decision that resolved to include the development of technical guidelines on transboundary movement of electrical and e-waste and used electrical and electronic equipment in the work programme of the Open-ended Working Group for 2014 to 2015.[146]

From the above analysis, it cannot be over-emphasised that the Basel Ban is a logical and vital implementation of the Basel Convention, particularly its requirement for ESM.[147] The Ban was designed to eliminate the worst abuses of an unfair, despicable trade by OECD countries. The Basel Ban is needed both as a legal instrument to block this immoral, uneconomic and unsustainable trade (particularly the e-waste trade under the guise of re-use) and also to send the strongest global message that such exploitation will no longer be tolerated.[148] Failure to ratify the Basel Ban sends the unmistakable message that these countries wish to manage their hazardous waste problems by exporting them to poorer countries rather than taking responsibility for them at home.[149]

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[144] This call was made by a representative speaking on behalf of African countries at COP 10. She also noted that such goods rapidly became waste, contributing to a mounting problem for countries in Africa in particular. See Para. 67, COP 10 Report, above (note 138) at 9. The Basel Action Network was also particularly critical of the CLI for a number of reasons. Firstly, because NGOs were locked out of the CLI meetings and were thus unable to contribute to the dialogue. Secondly, because the CLI reached erroneous conclusions on international hazardous wastes, including electronic waste, by stating that most of the e-waste trade moves between developing countries. BAN noted CLI's failure to note that most waste trade is unreported or illegal and existing data is not concise enough for analysis. Thirdly, BAN also refuted the CLI's Draft Omnibus Decision, which cited only one rationale for the Basel Ban – the protection of 'vulnerable countries.' See COP 10 Newsletter, above (note 88) at 2.

[145] Para. 65 of COP 11 Report, above (note 141) at 10.

[146] Decision BC-11/4 'Technical Guidelines on Transboundary Movements of Electrical and Electronic Waste and Used Electrical and Electronic Equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention' in CoP-11 Report, above (note 140) at 40.

[147] Basel Action Network 'Environmentally Sound Management and the Basel Ban Amendment' 6 – 10 December, 1999, available at *http://ban.org/library/esmban.html,* accessed on 19 June 2014.

[148] Basel Action Network 'Intervention Regarding Entry into Force of the BAN Amendment' 24 June 2008, available at *http://www.ne.jp/asahi/kagaku/.../basel/BAN/.../Intervention_BAN_Amendment*, accessed on 22 June 2014.

[149] BAN 'The Basel Ban Amendment: Entry into Force = Now!' above (note 130) at 2.

3.2 The impacts of regional agreements on the e-waste trade

The Basel Convention created an avenue for Parties to enter into bilateral, multilateral or regional agreements or arrangements regarding the transboundary movements of hazardous wastes, provided such agreements do not derogate from the ESM of such hazardous wastes as required by Basel.[150] In line with this, three regions – Africa, the EU and the South Pacific – have instituted agreements concerning the movements of such waste and e-waste.[151] However, this chapter places emphasis on the African Bamako Convention 1991 and the European Union Restriction on Hazardous Substances Directive 2002 and their applications to e-waste.

3.2.1 The Bamako Convention

The Bamako Convention was adopted in response to the dissatisfaction among African states at the negotiations to the Basel Convention that their needs had not been adequately taken into account in Basel.[152] In 1988, the Ministers of the Organisation of African Unity (now the African Union) Ministers described the importation of hazardous wastes and industrial wastes into Africa as a 'crime against Africa and the African people.'[153] It was therefore unsurprising that at the opening of the adoption ceremony of Basel, the spokesperson of the African states that had participated in the drafting of the Basel Convention stated that they 'were not prepared to sign the Convention, as they considered

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[150] Article 11 of the Basel Convention.

[151] Karin Lundgren *The global impact of e-waste: Addressing the challenge*, (2012) ILO, Geneva at 35. It should be noted that prior to the adoption of the Basel Convention in 1989, the 1986 Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Noumea, 24 November 1986), 26 ILM 38 (1987), a Convention of considerable scope, was already in existence. Arts. 10 and 11 of this instrument speak of measures that the states in the region should take to prevent, reduce, and monitor, in the area covered by the Convention, pollution that could be caused by the immersion in the sea or by dumping of toxic or hazardous wastes. See Kiss and Shelton, above (note 82) at 214.

[152] As at 18 July 2014, more than 41 African states have ratified, signed or acceded to the Basel Convention. See UN Treaty Collections Database 'Basel Convention 1989' available at *https://treaties.un.org/pages/ShowMTDSGDetails.aspx?src=UNTSONLINE&tabid=1&mtdsg_no=XXVII-3&chapter=27&lang=en#Participants,* accessed on 18 July 2014. See also K Kummer, Katharina Kummer *INTERNATIONAL MANAGEMENT OF HAZARDOUS WASTES –The Basel Convention and Related Legal Rules* (1995) in Ian Brownlie (Gen. Ed.), *Oxford Monographs in International Law* at 99.

[153] OAU Council of Ministers Resolution – May 1988. See also Kummer, above (note 152) at 44.

it too weak.'[154] Thus, in 1991, the Organisation of African Unity: Convention on the Ban of Import into Africa and the Control of the Transboundary Movement of Hazardous Wastes within Africa (hereafter, Bamako Convention) was adopted,[155] and it came into force in 1998.

The Bamako Convention was adopted strictly to prohibit the importation of hazardous wastes into and within Africa and is similar in form to the Basel Convention. The main difference highlighted in Bamako Convention is its inclusion of radioactive wastes within its scope,[156] and the imposition of strict, unlimited liability on hazardous waste generators.[157] It mandated all Parties to 'take appropriate legal, administrative and other measures within… their jurisdiction to prohibit the import of all hazardous wastes, for any reason, into Africa from non-Contracting Parties. Such import shall be deemed illegal and a criminal act.'[158] Parties are also required to appoint a national body to act as a 'Dumpwatch'[159] and to coordinate with relevant governmental and non-governmental bodies in each jurisdiction.[160] To ensure that the importation ban is effectively employed by Parties, the Bamako Convention also directed Parties to introduce 'national legislation for imposing criminal penalties on all persons who have planned, carried out, or assisted in… illegal imports.'[161]

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[154] Kummer, above (note 152) at 45. See also Art and Gupta, above (note 37) at 534.

[155] 30 I.L.M. 773 (1991). The Organisation of African Unity is now referred to as the African Union (AU).

[156] Article 2 (2), Bamako Convention 1991.

[157] Article 3 (b).

[158] Article (4) (1).

[159] COP-1 of the Bamako Convention adopted Decision 1/12 – Competent Authorities, Focal Points and Dumpwatch. Decision 1 asks parties who had not yet informed the Secretariat of the designation or establishment of their Competent Authorities, Focal Point and Dumpwatch to do so soonest. Decision 2 encouraged the Secretariat in collaboration with Parties to seek the necessary funds to convene a regional training workshop for Competent Authorities, Focal Points and Dumpwatches on the use of the control system associated with the importing and exporting of hazardous wastes.

[160] Article 5 (4).

[161] Article 9 (2).

The Convention was implemented to impose a stronger message about hazardous waste trade and management within Africa.[162] The foresight of the AU nations to include a hazardous waste importing ban provision in Article 4 is commendable and perhaps would have been sufficient to prohibit a total ban on the hazardous and electronic waste trade. Unfortunately, enforcement remains a challenge owing to the lack of adequate and predictable resources. Munyua notes that the extent to which the instrument has been streamlined within national legislation has not been formally documented and that there is a need for stronger cross-border cooperation.[163] Also, the failure by African states to ratify the Convention indicated a lack of interest on their part to prohibit the importing of hazardous e-waste into their jurisdictions. This is exacerbated by the fact that, by June 2013, of the 55 AU member states, only 29 are signatories to the Bamako Convention.[164]

The first meeting of the CoP to the Bamako Convention was held in June 2013, and it adopted a Decision on the prevention of hazardous e-waste and near-EOL EEE.[165] The Conference recognised that Africa is a major destination for e-waste from developed countries[166] and indicated an awareness of the lack of capacity and resources to handle electrical waste and e-waste in most African states in an environmentally sound manner.[167] The Decision recalled Article 4 (1) of Bamako, which prohibits the ban of importation of

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[162] K Tutu, 'The Bamako Convention and good management of hazardous wastes: a case for sustainable development' at 4, available at *http://www.basel.int/Portals/4/Basel%20Convention/docs/.../bamako.ppt,* accessed on 8 June 2013. See also Lundgren, above (note 150) at 35.

[163] A Munyua, 'Regional Report: East Africa' (2010) *Global Information Society Watch,* available at *http://www.giswatch.org/sites/default/files/gisw2010regionaleastafrica_en.pdf,* accessed on 13 April 2014. See also Lundgren, above (note 150) at 35.

[164] UNEP 'First Conference of the Parties to the Bamako Convention' – held in Bamako, Mali, 24-26 June 2013, available at *http://www.unep.org/delc/BamakoConvention/tabid/106390/Default.aspx#*, accessed on 14 July 2014.

[165] Decision 1/15 – Decision on the Prevention of Hazardous e-waste and Near End-of-Life Importation and Dumping in Africa. This decision was adopted at the first Session of the Conference on 26 June 2013. Decision 1/15 available at UNEP 'FIRST CONFERENCE OF PARTIES TO THE BAMAKO CONVENTION – Decisions,' available at *http://www.unep.org/delc/BamakoConvention/BamakoHighLevel/tabid/128496/Default.aspx,* accessed on 14 July 2014.

[166] Para. 1 of Decision 1/15.

[167] Para. 2.

hazardous wastes into Africa. It indicated the CoP's understanding that, even when used, EEE is not defined as waste due to its functionality; it may become waste rapidly after importation due to its poor condition or age, and therefore, importation of such near-EOL EEE may also need to be strictly controlled by the Parties.[168]

The CoP also recalled that Africa moved to accept e-waste as an emerging global environmental policy issue,[169] and appreciated that the problem of e-waste in Africa remains very serious and threatens the achievement of the UN Millennium Development Goals if not acted upon with universal resolve.[170] In line with this, the Decision 'urged Parties and other African states who hadn't already done so, to enhance or supplement existing legislation to prevent illegal and unwanted traffic in hazardous and other e-waste from entering their territory and the African continent.'[171] It also urged them to legally consider all non-functional or untested used EEE as hazardous waste, to prevent their importation into Africa,[172] and to adopt legislation to control the importation of near-EOL or unwanted equipment, among others by designating such equipment as hazardous waste.[173] The Decision further encouraged Parties and other African states to adopt legislation for IPR in the collection and environmentally sound recycling of domestic occurrences of e-waste in Africa.[174] It also resolved to, nationally and regionally, undertake intense promotion and implementation of public education and awareness on the environmental and human health problems associated with the uncontrolled importation of e-waste, while taking advantage of the economic opportunities including the creation of green jobs that may arise from the ESM of e-waste.[175] The inclusion of IPR

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[168] Para. 6.

[169] Para. 9. See also Resolution II/4 on emerging policy issues adopted by the International Conference on Chemicals Management at its second session, held in Geneva, Switzerland, 11-15 May 2009.

[170] Para. 13.

[171] Decision 1.

[172] Decision 3.

[173] Decision 4.

[174] Decision 2.

[175] Decision 6.

in the CoP's Decision to the Bamako Convention in sound recycling of e-waste is insightful, alluding to the fact that Parties are aware of a need to utilise EPR in e-waste management. The specific reference to IPR rather than collective producer responsibility (CPR) (as discussed in Chapter 2) indicates a recognition of potential for its applicability in developing African states.

The Bamako Convention would have been sufficient to handle the total hazardous waste import ban into and within Africa had there been more willingness by Parties to the Convention to ratify it. The COP's inability to take a prior decision on e-waste management for 22 years since the adoption of Bamako paved the way for the attendant call that the Basel Ban Amendment be utilised as the instrument to stop the total ban on importation of WEEE into developed countries. However, with the 2013 Decision's inclusion and the recognition of IPR, and the economic, social and environmental opportunities that open up from the application of ESM of e-waste, it indicates a concerted effort by African states to approach e-waste management in a sustainable manner in order to halt the e-waste trade as soon as possible. Nonetheless, the Bamako Convention is compared against the backdrop of the European Directive on the restriction of the use of certain hazardous substances in EEE. This comparison is pertinent to this chapter, to highlight the influence a regional treaty can have on e-waste management.

3.2.2 The RoHs Directive

The European Union Directive on the Restriction of the use of certain hazardous substances in electrical and electronic equipment (the RoHS Directive) was adopted in 2002.[176] It has been in force since 2003 and its purpose is to restrict the use of hazardous substances in EEE and to contribute to the protection of human health and the environmentally sound recovery and disposal of e-waste.[177] The Directive asserts the

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[176] Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment [RoHs I]. Directive 2011/65/EU [RoHS II) became law on 21 July 2011 and replaced RoHS I on 2 January 2013. See RoHs I – available at *http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002L0095,* accessed on 14 July 2014. RoHS II available at *http://www.ce-mark.com/RoHS2.pdf*, accessed on 14 July 2014.

[177] Article 1, RoHs Directive 2011; Lundgren, above (note 150) at 36.

necessity of laying down rules regarding EEE and its substances, noting that the 'disparities between the laws or administrative measures adopted by the Member States regarding the restriction of the use of hazardous substances in EEE could create barriers to trade, and distort competition in the Union, and may thereby have a direct impact on the establishment and function of the internal market.'[178] The Directive applies to eight categories of EEE: large household appliances; small household appliances; IT and telecommunications equipment; consumer equipment; lighting equipment; electrical and electronic tools (except large-scale stationary industrial tools); toys, sports and leisure equipment; and automatic dispensers.[179] RoHS also restricts the use of certain hazardous substances in electrical and electronic products: four heavy metals (lead, mercury, cadmium and hexavalent chromium) and two brominated flame retardants, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).[180] The restriction of these substances are based on the EU recognition that they 'would be likely to pose risks to health or the environment especially when treated in less than optimal conditions.'[181]

Under the RoHS Directive, the manufacturer and even the EU distributor are to ask all members of the supply chain that are fabricating components and sub-assemblies to comply with the RoHS Directive.[182] Therefore, Article 6 provides that, in reviewing

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[178] Para. 2 of the Preamble to RoHs II. Trade barriers or technical barriers to trade refer to laws. These laws include regulations governing all forms of commerce including production, products, services, investment, intellectual property rights, etc., which might serve as a 'barrier to trade' by reducing profit potential. Thus, the recognition in the Preamble of the Directive that it may create barriers to trade refers to the potential reduction in profit envisaged by members of the supply chain in EU member states in the production of EEE. See Jim Puckett, 'When Trade is Toxic – The WTO Threat to Public and Planetary Health' BAN/Asia Pacific Environmental Exchange Project, October 1999 at 5, available at *http://ban.org/library/when_trade.pdf*, accessed on 16 June 2014.

[179] Annex I of RoHS II, p. 12. See also EU 'RoHS – Restriction of Hazardous Substances Directive,' available at *http://export.gov/europeanunion/weeerohs/rohsinformation/*, accessed on 13 August 2011.

[180] It allows maximum concentration of 0.1% (except for cadmium that is limited to 0.01%) by weight of homogenous material i.e. material that cannot be mechanically disjointed into different materials. See Annex II of RoHS II; EU RoHs Directive; ibid.

[181] Para. 7 of the Preamble.

[182] Hans-Jochen Lueckefett 'Future Developments of Product Streams and the Necessary Adaptation of Waste Management and the Legislation Ruling It' in Hieronymi *et al.,* above (note 142) at 191.

and amending this list of restrictive substances, the European Commission must take special account of whether a substance or group of similar substances could: (a) have a negative impact during EEE waste management operations, including on the possibilities for preparing for the re-use of waste EEE or for recycling of materials from waste EEE; (b) give rise, given its uses, to uncontrolled or diffuse release into the environment of the substance, or could give rise to hazardous residues, or transformation or degradation products through the preparation for re-use, recycling or other treatment of materials from waste EEE under current operational conditions; (c) could lead to unacceptable exposure of workers involved in the waste EEE collection or treatment processes; (d) could be replaced by substitutes or alternative technologies which have less negative impacts.[183] This Article 6 requirement exemplifies the physical/environmental responsibility of a producer (described under the EPR matrix in Chapter 2). Such legislation requiring manufacturers or distributors to use less hazardous materials/substances for EEE manufacture or production in the EU is an important step in e-waste management and the further implementation of the EPR matrix.

The Commission is also mandated, during the review, to consult interested parties, including economic operators, recyclers, treatment operators, environmental organisations, and employee and consumer associations.[184] This review of restricted substances is to be reviewed by the Commission on or before 22 July 2014, or periodically thereafter on its own initiative, or following a submission of a proposal by a Member State.[185]

This Directive is commendable because it expressly lists hazardous substances, improper management and handling of which makes EEE dangerous to human health and the environment. It also mandates a major change in materials and processes for a global industry without any real attempt to assess benefits and costs.[186] The EU has been

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[183] RoHs II.

[184] Article 6 (2) RoHS II.

[185] Article 6 (1), RoHs II.

[186] Eric Williams 'Future Perspectives on Electronic Scrap' in Hieronymi *et al.,* above (note 142) at 257.

proactive in periodically reviewing and amending its environmental legislation, particularly its policies on EEE; thus, the RoHs Directive provides a clear incentive for producers of EEE in that region to adopt 'green design' in manufacture of EEE or face appropriate sanctions. The distinctiveness of this Directive is highlighted by the acceptance and domestication of its provisions into national law by various EU member states.[187]

In this chapter, the Bamako Convention and the RoHS Directive are highlighted owing to their unique application and potentials for EEE management. However, the RoHS Directive appears to be stricter and more specific towards EEE management. It is particular about the use of certain hazardous substances in EEE manufacture, and places legal responsibility on the manufacturer of EEE to comply with the provisions of the Directive, which is indicative of an element of the EPR approach. The necessity of strict compliance is absent from the Bamako Convention, and the recognition of the need for sustainable management of e-waste and IPR in its Decision are merely to guide the Parties and is not mandatory. In view of the strict liability provision that the Bamako Convention adopts, and the continued importation of e-waste into developing countries in the region, it is distressing that the Convention has not adopted a binding decision regarding a clear definition of *importer of e-waste* or set out clear provisions regarding the prohibition of certain hazardous substances that should not be contained in new, used or second-hand EEE, just like the RoHs Directive. While both regional conventions require their adoption and implementation in e-waste legislation at the national level, the provisions set out in the regional treaties may positively influence attendant national legislation on e-waste.

Other regional conventions exist, which, while not directly applicable to e-waste management, apply to the management of hazardous waste in regions. The Lome IV Convention, a comprehensive trade agreement between the EU and its member states and the African, Caribbean and Pacific states (ACP) was adopted in 1989 and came into force in September 1991.[188] It regulates transboundary movements of hazardous wastes and

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[187] Germany adopted a new Ordinance on Electrical and Electronic Equipment in 2012 that incorporates the provisions of RoHS II. See Baker & Mackenzie 'Product Recalls under the RoHS Directive,' available at *http://www.bakermckenzie.com/.../AL_March2013_RecallsunderRoHS.pdf*, accessed on 18 July 2014.

[188] Lipman, above (note 30) at 280.

prohibits all direct or indirect exports of hazardous wastes and radioactive wastes from EU states to the ACP states.[189] ACP states were also required to prohibit imports of same from the EU or any other country.[190] Regrettably, the Lome IV Convention does not provide a comprehensive scheme for the transboundary movement of hazardous wastes – like Basel.[191] However, it is now of historical interest only, because it has been replaced by the 2000 Cotonou Agreement between the EU and 77 ACP states.[192] The Cotonou Agreement, a general development promoting trade and aid, appears to be weaker than the Lome IV Convention's ban on the waste trade.[193] It states that 'cooperation on environmental protection and sustainable utilisation and management of natural resources shall… [take] into account issues relating to the transport and disposal of hazardous waste.'[194]

The Regional Agreement on the Transboundary Movement of Hazardous Wastes adopted in 1992 by six Central-American countries prohibits the transboundary transport as well as the import and transit of hazardous wastes.[195] A 1995 Convention to Ban the Importation into Forum Island Countries of Hazardous Wastes and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific (the Waigani Convention) further controlled the movements of

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[189] Article 39 (1); Lipman, above note (30) at 280.

[190] Ibid.

[191] Ibid.

[192] Sands, above (note 11) at 695; Hunter *et al.,* above (note 36) at 967.

[193] However, Declaration X of the Cotonou Agreement's Final Act provides that 'all ACP states have expressed their determination to be guided by the principles and provisions' of the Bamako Convention, thus implying that the Parties are also committed to the hazardous waste import ban. See Hunter *et al.,* above (note 36) at 967.

[194] Article 32 (1) *(d)* of the Cotonou Agreement.

[195] Kiss and Shelton, above (note 82) at 215.

hazardous waste.[196] Within the Convention area, developing Pacific Island states shall ban the import of all hazardous wastes and radioactive wastes from outside the region.[197]

Finally, in 1996, the treaty system elaborated for the protection of the Mediterranean Sea was supplemented by a specific Protocol for the Prevention of the Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal (the Izmir Protocol).[198] It is framed on the principles and approaches of the Basel Convention, but is integrated into the structures of the Mediterranean Treaty system.[199] The Protocol prohibits the export of hazardous and radioactive wastes to non-OECD countries and Parties that are not EC members are prohibited from importing hazardous and radioactive wastes.[200]

In accordance with Article 11 of the Basel Convention, directing parties to enter into bilateral agreements or arrangements, the U.S. and Canada entered into an Agreement on Transfrontier Movements of Hazardous Wastes.[201] Another example of a bilateral treaty is that between the U.S. and Mexico – Annex III to the Agreement of Cooperation for the Protection and Amelioration of the Environment in the Frontier Region between Mexico and the U.S.[202]

The above analysis highlighted the efforts of specific instruments in the regulation of hazardous wastes in an international and regional capacity. However, the Basel Convention focused mostly on management of 'disposal' of hazardous wastes, while the

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[196] 16 September 1995. This treaty entered into force in 2001. See Kiss and Shelton, above (note 82) at 215; Dejo Olowu 'Menace of E-wastes in Developing Countries: An Agenda for Legal and Policy Responses' (2012) 8 (1*) Law Envt. Dev J* 59 at 71.

[197] Article 1 (b) and Article 3 of the Waigani Convention 1995. See also Kiss and Shelton, above (note 82) at 215.

[198] 1 October 1996, UNEP (OCA)MED/IG.4/4.

[199] Kiss and Shelton, above (note 82) at 215.

[200] Puckett, above (note 102).

[201] (Ottawa, 28 October 1986). See Kiss and Shelton, above (note 82) at 215. See generally BAN 'Exporting Harm: The high-tech trashing of Asia (The CANADIAN Story),' available at *http://ban.org/E-waste/Exporting%20Harm_canada.PDF,* accessed on 18 June 2014.

[202] (Washington, 12 November 1986, 26 ILM 16 (1987). See Kiss and Shelton, above (note 82) at 215.

Basel Ban sought an outright ban on the transboundary movement of hazardous wastes, including e-waste, from OECD to non-OECD countries. While the Basel Ban is yet to come into force, the CoP's efforts to the Basel Convention, and the efforts of regional agreements (the Bamako Convention and the RoHs Directive) signify a unified recognition of the need to manage WEEE in a sustainable manner. The Basel CoPs were also instrumental in producing policy documents that are to assist Parties in preparing and adopting policies on e-waste in their own jurisdictions. Since the next two chapters provide an analysis of e-waste policy in South Africa and Nigeria, the ensuing part of this Chapter now highlights these Basel CoP documents on EEE.

3.3 Basel COP documents on EEE

As noted above, the Conference of Parties to the Basel Convention have been instrumental in the development of guidelines and working documents to guide Parties to the Convention in e-waste management. Although these documents are not legally binding on Parties to the Convention, they provide certain parameters that should be considered in the management of e-waste fractions, and set appropriate standards for the adoption, planning, implementation, enforcement of provisions of e-waste law and policy. These documents include the Guidance Document on the Environmentally Sound Management of Used and End-of-Life Mobile Phones 2012; the Guidance Document on Partnership for Action on Computing Equipment 2013; and the Technical Guidelines on the Transboundary Movement of E-waste 2013.

3.3.1 The Mobile Phone Partnership Initiative (MPPI) (2012)

The issue of wastes from discarded mobile phones was regarded as significant by Parties to the Convention, due to their sheer quantity globally and the possibility of pollution as well as loss of valuable resources.[203] In 2002, at CoP-6, the Mobile Phone Partnership Initiative (MPPI) was launched and a Decision was taken on the sustainable partnership

[203] The growth in the use of mobile phones has escalated from the first few users in the 1970s to 1.76 billion in 2004. The result of this growth amounts to waste when such phones reach their end-of-life. See Basel Convention 'Mobile Phone Partnership Initiative,' available at *http://www.basel.int/Implementation/PartnershipProgramme/MPPI/Overview/tabid/3268/Default.aspx*, accessed on 15 July 2014.

on the ESM of EOL mobile phones.[204] The MPPI's overall objective is to promote the objectives of the Basel Convention in the area of ESM of EOL mobile phones. It particularly seeks to achieve better PS;[205] influence consumer behaviour towards more environmentally friendly actions; promote the best re-use, refurbishing, material recovery, recycling and disposal options; and mobilise political and institutional support for ESM.[206] Five technical guidelines have been developed from the MPPI,[207] but the final Guidance Document on the Environmentally Sound Management of Used and End-of-Life Mobile Phones 2012 is of particular interest. It was prepared by the Mobile Phone Working Group of Basel Convention and contains summaries and recommendations, taken from all five technical guidelines.[208]

The Guidance Document (hereafter, GD) is not a legally binding document under the Basel Convention. Its main objective is to provide guidance for the ESM of used and

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[204] Decision BC VI/31 – Sustainable Partnership for Environmentally Sound Management of End-of-Life Mobile Telephones in CoP-6 Report, above (note 57) at 148-149. The Decision explains in a footnote that 'the word "partnership" used… to be understood in the context of the Basel Declaration. It is a cooperation between different stakeholders (private and public) to work together towards a common goal; it has no legal implication. See CoP-6 Report at 149.

[205] The Decision does not elaborate on the concept of product stewardship.

[206] Basel MPPI, above (note 203).

[207] They include: 1) Guideline on the Refurbishment of Used Mobile Phones (Revised and Approved Draft), Basel Mobile Phone Partnership Initiative Project 1.1 (25 March 2009); 2) Guideline on the Refurbishment of Used Mobile Phones (Revised and Approved Draft), Basel Mobile Phone Partnership Initiative Project 1.1 (25 March 2009); 3) Guideline for the Collection of Used Mobile Phones (Approved Draft), Basel Mobile Phone Partnership Initiative Project 2.1 (25 March 2009); 4) Guideline on Material Recovery and Recycling of End-of-Life Mobile Phones (Approved Draft), Basel Phone Partnership Initiative Project 3.1 (25 March 2009); and 5) Guideline on Awareness Raising-Design Considerations (Revised and Approved Draft), Basel Mobile Phone Partnership Initiative Project 4.1 (25 March 2009). See UNEP Basel 'Partnership for Action on Computing Equipment' at 47, available at *http://www.basel.int/Implementation/PartnershipProgramme/PACE/Overview/tabid/3243/Default.aspx,* accessed on 15 July 2014.

[208] The overall guidance document was submitted at CoP-9 in 2008, and the final guidance document was adopted in its entirety at COP 10 in 2011. See Basel MPPI, above (note 203), ibid. See UNEP Basel *Guidance Document on the Environmentally Sound Management of Used and End-of-Life Mobile Phones* UNEP/SBC/2012/8 (2012) Publishing Service, United Nations: Geneva, available at *http://www.basel.int/Implementation/PartnershipProgramme/MPPI/MPPIGuidanceDocument/tabid/3250/Default.aspx*, accessed on 15 July 2014.

EOL mobile phones with the emphasis on re-use and recycling, thereby diverting such EOL products from final disposal operations such as landfill and incinerators.[209]

The GD examines environmental design issues concerning mobile phones, noting that new mobile phone design should now consider ease of collection, re-use, refurbishment and recycling information and should introduce such information into product marketing and labelling of internal software.[210] This will reduce the use of hazardous substances, making re-use, refurbishment, material recovery and recycling easier and extending the life of products.[211] It also acknowledges the EU RoHS Directive as the most direct government mandate to presently affect mobile phone design.[212] Concerning sustainability of mobile phones, the document notes the need for additional improvements in the design stages of the phones and calls for reduction of hazardous substances in their manufacture, so that ESM of used and EOL mobile phones can be facilitated and enhanced.[213] It reiterates that this is considered to be part of life-cycle thinking or the life-cycle approach, a concept to be applied by all manufacturers so that personal communications using mobile phones will be environmentally sustainable for the future.[214] The GD recognises EPR, as one that can enable producers to work towards sustainable design of their products, and notes that the 'unnecessary generation of waste can be reduced or eliminated through design changes in mobile phones,'[215] thus achieving

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[209] Paragraph 1.1- 1 of the GD, above (note 208) at 8. The GD describes a mobile phone as 'a cellular phone or cell phone [that is a] small, sophisticated personal two-way radio which sends and receives radio signals, carrying voice in personal communications with other mobile phones and landline telephones.' It also describes the composition of a mobile phone to include plastics, glass and ceramics and ferrous and non-ferrous metals, noting that this composition or constituents are not that different from the parts of other electronic devices like personal computers or portable consumer electronic devices. See Paras 12, 17 and 18, at p. 9 and 10.

[210] Para. 40.

[211] Para. 41.

[212] Para 43.

[213] Para. 45

[214] Para. 45.

[215] This can be achieved by either by making them compatible, through hardware or software, with all technical transmission technologies or by incorporating a modular component that can be easily changed in order to make the mobile phone adapt to different transmission technologies. See Para. 48.

the mandate of the Basel Convention in Article 4(2).[216] While recognising that manufacturers are in a better position to control the longevity, content and recyclability of the products they design and market, the document notes that EPR is an extension of the life-cycle thinking concept[217], which is already applied by all phone manufacturers.[218] These provisions of the GD promote the physical/environmental responsibility of the EPR matrix (discussed in Chapter 2). It therefore appears that, concerning specific EEE products such as mobile phones, the first and most important step in achieving sustainable management is their re-design and the use of less hazardous substances in their design. The GD's reference to EPR and life-cycle thinking also alludes to the fact that in the management of such EEE products, variations of environmental policy tools may be utilised. The life-cycle thinking is similar in form to EPR, but EPR is unique in that it seeks to place responsibility on the producer or importer, as the case may be.

Concerning the collection of mobile phones for direct re-use, repair or refurbishment or upgrading prior to re-use, the GD recommends the separate collection of used mobile phones in order to preserve the working characteristics and resale value of the collected phones.[219] It makes salient recommendations regarding EPR, and clearly alludes to the EPR matrix. It urges manufacturers, telecom operators and mobile phone distributors to consider the possibility of sharing the physical and financial obligations entailed in the collection and management of used mobile phones.[220] The GD emphasizes

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[216] The GD urged manufacturers to, inter alia: a) continue to consider re-use, and if necessary, repair and refurbishment in their design processes to facilitate repeated use by multiple consumers and much longer life before disposal; b) note that design changes should take into account, recyclability and reduction in toxicity during the design phase; c) substitute hazardous substance of beryllium and BFR in plastics used in mobile phones with available alternative alloys or other less hazardous materials that perform the same function. See para 2.2.3 at 8, 9 and 11.

[217] The document refers to life-cycle management as a 'holistic way of considering environmental issues associated with a substance, product or process from resource utilization through manufacture, transportation, distribution and use to waste management and disposal of residues from treatment or recycling operations. GD, above (note 208) at p. 39.

[218] Para. 47 at 16.

[219] This is dependent on the capacity to do so available in particular countries and the logistics involved in managing used phones and accessories. Para 3.2 at 6, 22; para 3.2 at 9.

[220] Part 3.2, para. 24.

the implementation of this immediately, especially in countries where legislation and infrastructure for the collection of used mobile phones is lacking. It also recommends that any financial mechanism established to hold and manage money collected as a pre-paid fee, ARF, ADF or as a refundable deposit must be transparent to all concerned persons, including governments and the public.[221] This provision is exactly what is required of a producer under the EPR matrix – the adoption of financial instruments to facilitate recycling and cognisance of the need to re-design EEE products to ensure sustainability. The GD's recommendation of shared responsibility among the stakeholders in the mobile phone industry also indicates a preference for product stewardship or the inclusion and application of same in conjunction with EPR. The GD also includes transparency in its reference to shared responsibility, perhaps aware that shared responsibility for EEE may not be effective if there is no transparency between stakeholders.

However, a provision of the GD's recommendation regarding the proposed financial instrument to be used is unclear. It suggests that where a direct and transparent fee is charged to the original buyer of a mobile phone and the used mobile phone is exported for re-use, it may be necessary for some portion of that fee to follow the used phone to an importing country to provide for its ESM there at its EOL.[222] The GD does not provide further guidance as to how this can be achieved, and it can be assumed that it requires national governments to set out a clear process in achieving this through mandatory or voluntary initiatives. To further consolidate the earlier endorsement on EPR, the GD encourages parties and signatories to the Basel Convention to implement policies and/or programmes that promote the environmentally and economically sound material

[221] Para 25, ibid.

[222] Para 26 at p. 23. This part of the GD on transboundary movement of collected used and EOL mobile phones and the recommendations regarding EPR is meant to be of assistance to regulatory agencies and authorities, manufacturers, network operators, repair, refurbishment and recycling facilities and any organisation that is involved in the export or import of used mobile phones for re-use; the movement of used mobile phones suitable for reuse, possibly after repair, refurbishment or upgrading in the importing country; or in transboundary movements of EOL mobile phones destined for material recovery and recycling and final disposal. See section 4.1, para. 59.

recovery and recycling of EOL mobile phones.[223] The extent to which this part of the GD has been considered by the Nigerian government is analysed in Chapter 5.

3.3.2 Partnership for action on computing equipment (2013)

The eighth meeting of the Conference of the Parties to the Basel Convention (CoP-8) in 2006 adopted the Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste.[224] This Declaration called for more structured and enhanced efforts towards achieving global solutions for the management of e-waste problems, and among others encouraged Parties to develop further partnerships targeting e-waste.[225] Thus, the Partnership for Action on Computing Equipment (PACE) was launched at CoP-9 in 2008 via Decision IX/9 to increase the ESM of used and EOL computing equipment, taking into account social responsibility and sustainable development, and promoting the sharing of information on life-cycle thinking.[226] The scope of PACE covers PCs and associated displays, printers and peripherals.[227] The PACE Guidance Document 2013 provides guidance for the ESM of used and EOL computing equipment, with an emphasis on re-use and recycling, thereby diverting such used and EOL products from final disposal operations such as landfills and incinerators.[228]

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[223] Section 6.2, para. 1 at p. 35. The document also contains provisions relating to storage and refurbishment facilities for mobile phones, and record keeping. See paras. 5, and 7 of p. 28 and sections 5.2.3, paras. 35, 36 and 38.

[224] Basel 'Partnership for Action on Computing Equipment,' available at *http://www.basel.int/Implementation/PartnershipProgramme/PACE/Overview/tabid/3243/Default.aspx,* accessed on 15 July 2014.

[225] Ibid. See Nairobi Declaration in Annex IV of CoP-8 Report, above (note 120) at 108-109.

[226] Annex to Decision IX/9, p. 2.

[227] Personal desktop computer, including the central processing unit and all other parts contained in the computer. Personal notebook and laptop computer, including the docking station, central processing unit and all other parts contained in the computer. Computer monitor, including the following types of computer monitor: (a) cathode ray tube; (b) liquid crystal display; (c) plasma. Computer keyboard, mouse and cables. Computer printer: (a) including the following types of computer printer: (i) dot matrix; (ii) inkjet; (iii) laser; (iv) thermal and (b) including any computer printer with scanning or facsimile capabilities, or both. See Annex to Decision IX/0.

[228] A PACE Guidance Document was produced by the PACE Working Group to complement the guidelines prepared by other project groups (Technical Working Group of Basel and MPPI), and a revised version of the Guidance Document was produced at CoP-11 in 2013. See UNEP *Guidance Document on the*

PACE emphasises the promotion of sustainable development for the continued use, refurbishment and repair of used computing equipment in developing countries and countries with economies in transition.[229] Concerning EPR, it urges industry including producers and other involved stakeholders to collaborate to ensure that there is adequate financing for computing equipment material recovery and recycling.[230] It also reiterates the importance of funding for collection of EOL computing equipment,[231] providing examples of funding mechanisms to include an ADF paid by consumers at sale, either as a visible fee shown on the receipt as a separate item or an invisible fee as part of the total sale price), or a levy on import (paid by the importer of the product at the point of entry into the country (either collected and managed by the industry or by the government).[232] This particular example in the PACE document is emphasised to show the importance of financial instruments advocated by the EPR matrix, and the role of such instruments in ensuring sustainable e-waste recycling. As stated in Chapter 2, in the case of developing countries where the importer is the key actor in the EEE chain, the kind of financial instrument applicable would be an import levy, and the provisions of PACE recognises this position. PACE thus exemplifies the application of an ARF or ADF or a levy on import, so that the importer should share some legal and financial responsibility for the importation of used EEE. Its reference to the management of such financial levy by government or industry is also indicative of the Basel Convention's evolution in recognising that e-waste management can be effectively managed if there is collaboration between government and industry or shared responsibility among stakeholders in industry.

Environmentally Sound Management of Used and End-of-Life Computing Equipment – UNEP/CHW.11.6/Add.1/Rev.1, Revised Version: 10 May 2013. See section 1.1, para 1.

[229] Section 1.1, para. 23 at 10.

[230] Para 5.2.2.2 at 30.

[231] Para 5.2.1.4 at 29.

[232] Ibid at 60.

While this document is not yet legally binding under the Basel Convention, its propositions will be significant in the effective application and management of e-waste when it is eventually adopted as a binding document.[233]

3.3.3 Revised draft Technical Guidelines on Transboundary Movement of E-waste (2013)

The first draft TG on transboundary movement of e-waste was first adopted at CoP-8 in 2006,[234] and revised at CoP 11 in 2013. It was reported at the 2013 meeting that there was still a lack of consensus on the definition of used equipment and e-waste and it was agreed to continue work on the guidelines in the period leading up to CoP-12 in 2015.[235] The TG focuses on clarifying aspects related to the transboundary movements of e-waste and used equipment that may or may not be e-waste.[236] The TG is intended for government agencies who wish to adopt legislation in this regard, including enforcement agencies that wish to implement, control and enforce legislation and to provide training on transboundary movements. The Guidelines are also intended to inform all actors involved in the management of e-waste and used equipment so they can be aware of the application of the Basel Convention and other considerations when preparing or arranging for transboundary movement of such items.[237] However, the scope of the Guidelines excludes the collection, treatment and disposal of e-wastes. It merely provides an overview of the composition of e-wastes and reiterates the requirement of Article 4 of the Basel Convention.

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[233] Like the MPPI Guidance Document above, PACE is intended to assist regulatory agencies and authorities, exporters, importers, manufacturers or recycling facilities/organisation in management of new or used computing equipment. See para. 3.1.2 of the PACE Guidance Document, above (note 228).

[234] Technical guidelines on the transboundary movements of e-waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention, UNEP/CHW.11/17/Add. 1 Annex, Decision BC 11/4 in Report of CoP-11, above (note 141) at 39.

[235] Per the Chair of the Contact Group on Technical Matters. See para. 65, at 10 of Report of CoP-11, above (note 141).

[236] United Nations Draft Technical Guidelines (TG) on transboundary movements of e-waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention, Draft 23 December 2013, para. 2, at 4.

[237] Para. 4.

While the TG does not address EPR in detail, it defines a *producer* as 'the international and local manufacturer of equipment or the importer or record of new or used equipment to be placed on the market at first invoice by sale.'[238] The Guidelines appear to be strictly geared towards assisting government authorities at the national level in identifying which EEE is used/second-hand and which is e-waste. It is intended to assist in determining the authenticity of used equipment, where the holders of such claim that it is intended for direct re-use and not e-waste, since it promotes direct re-use or re-use after repair or refurbishment as a contributor to sustainable development.[239] In view of the fact that the importation of e-waste occurs under the guise of re-use in developing countries, the TG are very important to guide implementation of the Basel Convention at the national level. The definition set out by the TG of a producer to also mean an importer also reveals that the Parties to the Basel Convention are aware of complexities that may arise in placing responsibilities envisaged under the EPR matrix on a producer, when the importer is the facilitator of e-waste imports in developing countries.

The TGs on the ESM of e-waste are commendable and will assist Parties to the Basel Convention in the management of used EOL EEE and e-waste. Chapters 4 and 5 examine the extent to which these TGs have been considered in the adoption of e-waste legislation in South Africa and Nigeria.

The Basel Action Network provided suggestions and commentary on the Draft Technical Guidelines in 2011 that were subsequently incorporated in the 2013 Draft.[240]

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[238] TG, above (note 236) at 19.

[239] Para. 10, at 6. Such claim should be backed up by the following: a) a copy of the invoice and contract relating to the sale and/or transfer of ownership of the used equipment and documentation accompanying the transport including a signed declaration that the used equipment has been tested and is destined for direct reuse and is fully functional; b) evidence of evaluation or testing in the form of a copy of the records (certificate of testing- proof of functionality) on every item within the consignment and a protocol containing all record information; c) a declaration by the holder who arranges the transport of the equipment that none of the equipment within the consignment is defined as or considered to be waste in any of the countries involved in the transport (countries of export and import, and if applicable, countries of transit; and d) appropriate protection against damage during transportation, loading and unloading, in particular through sufficient packaging and stacking of the load. See Paras 24 (a)-(d).

[240] 'Comments by the Basel Action Network (BAN) on the Draft Technical Guidelines on Transboundary Movements of Used Electronic and Electrical Equipment and E-Waste' 4 July 2011.

BAN commended the purposes and intents of the Guidelines but opposed the fact that the TGs do not cover all electronic waste including shredded, broken or crushed material as well as component parts and whole equipment.[241] The 2013 Draft incorporated BAN's suggestions regarding the lack of information regarding hazardous constituents of electronics and corrected this accordingly. Also, this Draft still does not cover all electronic waste to include shredded, broken or crushed material owing to the lack of agreement in the Contact Group on Technical Matters on the distinction between wastes and non-wastes. Perhaps this will be addressed in the work plan of the Group in their continued work on the guidelines during 2014 to 2015 leading up to CoP-12.

Conclusion

In this chapter, the opportunities globalisation offers in the management of the e-waste trade were emphasised. It highlights the role of the Basel Convention 1989 and its application to e-waste management, in the past 25 years since the Convention's adoption. Unfortunately, the Convention merely controls the transboundary movement/shipment of hazardous waste but does not ban it; hence the advocacy by developing countries for the Basel Ban 1995. Although the Basel Ban 1994 is yet to come into force, efforts of the Conference of Parties above indicate their recognition of the need for continuous adaptation in theory to strengthen the existing regime of the Convention and thus to regulate the transboundary movement of illegal e-waste. This adaptability and flexibility of the Basel regime on e-waste is in consonance with the Onzivu's idea of adaptive governance set out in the first part of this Chapter. Also, provisions of the Basel Convention which were identified earlier in this chapter indicate that the element of sustainable development – the three pillars of social, environmental and economic incentives towards effective waste management – although not expressly stated, are present in both treaties. The non-binding Decision adopted at CoP-1 of the Bamako Convention, which recognised the need for IPR in the collection and recycling of e-waste and the economic opportunities that may arise from the ESM of e-waste allude to the fact that the advocacy for economic, social and environmental incentives of sustainable

[241] Ibid at 1.

development and the EPR approach are now encapsulated in international framework on e-waste. Both instruments now represent a deep-seated conviction that the trade in used and or EOL EEE must be handled sustainably, through dedicated efforts by Parties at the national level.

The inclusion of elements of the EPR matrix in the Basel guideline documents also highlights the inextricable role of producer/importer responsibility, which must be applied to achieve sustainable e-waste management. It brings to the fore the need for continued guidance at the international level, to influence decision-making at the national level. While these documents on e-waste may not be legally binding on Parties, they provide a guide for various stakeholders at the national level in managing the e-waste stream. It also provides scope for possible consideration by regulatory authorities in developing countries where the e-waste trade still thrives. The MPPI and PACE Guidance Documents both provide salient recommendations for the application of EPR to e-waste fractions and advocate the need for sustainable management of same. Both documents appear clear on the funding mechanism types that can be applied, the promotion of shared responsibility among stakeholders, and an importer's financial and legal responsibilities, thus incorporating the EPR matrix. In view of the loopholes inherent in the Basel and Bamako Conventions regarding sustainability and the EPR approach as a means for effective e-waste management, these two documents are an improvement on the Basel Convention and emphasise the hypothesis of this thesis – that the EPR/PS approach be utilised to ensure effective e-waste management. These documents are also proof of the fact that the notion of sustainable EPR is now situated in international and regional framework on e-waste management and has become a fundamental part of global e-waste discourse.

The TGs, which appear to be more important for developing countries, leaves the implementation of its recommendations pertaining to used/second-hand equipment and e-waste shipments to the discretion of national authorities. Hence, it is up to government at the national level to consider all three of the above documents in the adoption, implementation and enforcement of e-waste legislation in their countries. Though this is fitting, more often than not, it has been suggested that countries appear to not understand the Basel Convention's aims and may not implement same, may be overly cautious when

applying same, or become more restrictive on shipments than they should be.[242] While it was shown earlier in this chapter that the binding provisions of the Basel and Bamako Conventions were not altogether successful in the cessation of trade in e-waste to developing countries, the existence of these three documents may not present an optimistic picture, particularly because Parties are not legally obligated to adhere to them. Nevertheless, one of the keys to successful implementation of the Basel Convention is to collaborate between countries or countries in a particular region on e-waste issues and to strategize accordingly to strengthen national e-waste law and policy. Accordingly, the following chapters will examine voluntary and mandatory initiatives on e-waste in South Africa and Nigeria, and the extent to which the treaties and documents discussed above influence such initiatives.

[242] Email correspondence with a Take Back Compliance Consultant, Dell/EMEA Take Back.

CHAPTER 4

E-WASTE MANAGEMENT IN SOUTH AFRICA THROUGH THE APPLICATION OF THE EPR PRINCIPLE

Introduction

The global management of general, hazardous and radioactive wastes formed part of the prominent issues discussed at the World Summit on Sustainable Development in Johannesburg in 2002. The Summit recognised the need for financial, technical and other assistance for developing countries, and placed the 'highest priority' on among others, waste prevention, minimisation, re-use and recycling.[1] Notably, the issue of e-waste as a specific waste stream requiring concerted management was nominated by the African region at its second Strategic Approach to International Chemicals Management (SAICM) regional meeting in Dar es Salaam in 2008,[2] and was later submitted as an emerging policy issue under SAICM.[3] The problem identified by the African region was the lack of capacity for the ESM of e-waste, resulting in the release of toxic chemicals such as heavy metals and brominated flame retardants into the environment, thereby also threatening human health.[4]

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[1] Para 22 (a) and (b), UN A/CONF/99/20 *Report of the World Summit on Sustainable Development, Johannesburg, South Africa,* 26 August – 4 September 2002, pp 1 – 167, at 19, available at *http://www.un.org/jsummit/html/.../summit.../131302_wssd_report_reissued.pdf,* accessed on 11 August 2014.

[2] SAICM/ICCM.2/INF/36 'Background information in relation to the emerging policy issue of electronic waste' International Conference on Chemicals Management, Second Session, Geneva, 11-15 May 2008 at 3, available at *http://www.saicm.org/index.php?option=com_content&view=article&id=85&Itemid=520* accessed on 16 September 2014]. See generally Mathias Schleup *et al.,* 'Assessing the e-waste situation in Africa' (2008) at 1-6, available at *http://www.academia.edu/1531912/Assessing_the_e-waste_situation_in_Africa*, accessed on 13 August 2014.

[3] Ibid.

[4] DEA/ATE *Identification of the Magnitude of the Electrical and Electronic (E-Waste) Situation in South Africa: A Strategic Approach to International Chemicals Management (SAICM) E-Waste as an Emerging Policy Issue,* November 2012 at 13, available at *http://africainstitute.info/wp-content/.../02/E-WASTE-South-Africa-2012.pdf*, accessed on 10 September 2014.

Most countries in Africa have yet to develop practical solutions to e-waste management, and have yet to recognise it as a hazardous waste stream.[5] These countries' failure to do so is exacerbated by the fact that basic waste removal presents a problem, and most of them have dumpsites scattered around various communities rather than regulated landfills.[6] South Africa stands out as an exception among countries in the region with its concerted efforts towards general waste management, the recognition of EPR as an inextricable part of e-waste management, and industry efforts towards management of e-waste. These constitute the focus of this chapter.

South Africa is a middle-income country that produces significant amounts of e-waste, and many look to it as a leader on the African continent for developing cogent and sustainable practices.[7] Most of its electrical and electronic goods are imported through direct purchase, second-hand purchase and donations from the global North.[8] With a population of more than 54m people,[9] more than 14m items of computing equipment was sold in 2008.[10] It has been estimated that white goods, consumer electronics and IT in South African homes amount to anything between 1m and 2m tons,[11] most of which have

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[5] This is not the case in developed countries, most notably in the European Union, as they have taken steps to develop policy guidelines and legislation for developing e-waste management systems. Some of the most successful examples of these systems can be found in countries such as Switzerland and the Netherlands. See Alan Finlay and David Liechti 'e-Waste Assessment South Africa' November 2008 at 5, available at *http://www.ngopulse.org/.../e-Waste%20Assessment%20South%20Africa.pdf*, accessed on 9 August 2014.

[6] Alan Finlay 'E-Waste Challenges in Developing Countries: South Africa Case Study' APC Issue Papers Series, November 2005 at 3, available at *http://www.apc.org/en/system/files/e-waste_EN.pdf*, accessed on 15 August 2014.

[7] Mary Lawhon 'Contesting power, trust and legitimacy in the South African e-waste transition' (2012) 45 *Policy Sci* 69 at 70.

[8] The global North refers to countries that are economically developed, and the global South refers to underdeveloped economies. See Lemuel Ekedegwa Odeh 'A Comparative Analysis of Global North and Global South Economies' (2010) 12 (3) *Journal of Sustainable Development in Africa* 338 at 340. See also Mary Lawhon 'Dumping Ground or Country-in-Transition? Discourses of E-waste in South Africa' (2013), available at *http://www.repository.up.ac.za/bitstream/.../Lawhon_Dumping_2013.pdf?...1*, accessed on 13 September 2014.

[9] Statistics South Africa (Stats SA) estimates the country's mid-year population at 54 million. See Statistics South Africa *Statistical release P0302 – Mid-year population estimates 2014* at 3, available at *http://beta2.statssa.gov.za/publications/P0302/P03022014.pdf,* accessed on 21 September 2014.

[10] DEA/ATE E-Waste Document, above (note 4) at 20.

[11] Finlay and Liechti, above (note 5) at 4; DEA/ATE E-Waste Document, above (note 4) at 13.

already entered the waste stream, with more being estimated to do so between 2013 and 2018. Consequently, SA generates more than 100,000 tonnes of e-waste per year, with formal recyclers processing approximately 20% of this. The rest is either stored by the owner, recycled informally, added to the domestic waste stream, or dumped illegally.[12] Although South Africa is not one of the target dumping sites of the world,[13] it is a party to the 1989 Basel Convention. From 1994 to the present day (2015), it has made laudable efforts to develop several policy documents and legislation on waste management. Although the country has no specific legislation on e-waste, the management of this waste stream is subsumed and regulated under general waste management laws – the Environmental Conservation Act 1989,[14] the National Environmental Management: Waste Act 2008,[15] and the National Waste Management Strategy 2011.[16] While there are efforts to develop industry through an Industry Waste Management Plan (IWMP)[17] and other means, existing policy documents and legislation also provide for integrated management of e-waste, including industry efforts in this regard.

In this chapter, the regulation of e-waste in South Africa is explored, highlighting the efforts of government and industry in its management. The aim in this chapter is to provide a compass for action in Nigeria for sustainable e-waste management. It provides a background to waste management in South Africa and its governing structure as it relates

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[12] 'E-waste management in South Africa, Kenya and Morocco: Developing a pathway to sustainable systems' Report commissioned by Hewlett-Packard 2009 at 8.

[13] Stephanie Nieuwoudt 'Opportunities Spring from e-Waste' October 6, 2009, available at *http://www.ipsnews.net/2009/10/environment-south-africa-opportunities-spring-from-e-waste,* accessed on 13 September 2014. Nigeria constitutes one of such target dumping sites and e-waste management in this jurisdiction will be discussed in the next Chapter.

[14] Act 73 of 1989.

[15] Act 59 of 2008.

[16] Department of Environmental Affairs *National Waste Management Strategy* (GN 344 in *GG* 35306 of 4 May 2012).

[17] In accordance with Part 7 of the Waste Act 2008.

to e-waste management. It also examines the effectiveness of existing policy documents and legislation on waste, and its implications for e-waste management.

To emphasise the success of industry initiatives in its application of EPR principle, it includes results of interviews conducted with the ROSE Foundation – the only voluntary organisation in South Africa to have successfully implemented the EPR principle to the recycling of waste oils in its model. The application of EPR to waste tyres is also emphasised as proof that the EPR approach to waste management finds expression in the e-waste recycling industry in South Africa. This emphasis is aptly represented with the results of the interviews conducted with personnel of the organisations and e-waste recycling companies in Johannesburg and Cape Town. This chapter also analyses the roles of two e-waste organisations in their roles as producer responsibility organisations, who are actively involved in the restructuring of the e-waste industry, and shaping e-waste governance in South Africa. It also highlights the roles of the Recycling Development Initiative of South Africa, the DEA and the DTI, in a bid to show the efforts of the national government in e-waste management and waste tyres, which is within national jurisdiction. Thus, this chapter, aptly demonstrate how South Africa has been able to achieve sustainable e-waste management within the last decade, making it a worthy model for a developing Nigeria.

4. A background to waste management in South Africa

4.1 South Africa's international waste management obligations

As discussed in Chapter 1, environmental problems arising from disposal of hazardous waste in developing countries first gained international attention in the late 1980s, when several incidents of dumping in Africa were reported.[18] One such incident, the Thor Chemicals Incident, occurred in South Africa in the late 1980s,[19] and perhaps facilitated

[18] Chapter 1 highlights such incidents in Guinea Bissau and Nigeria, but particularly in Nigeria. See Z Lipman 'Transboundary movement of hazardous waste: environmental justice issues for developing countries' 1999 *Acta Juridica* 266 at 267.

[19] Thor Chemicals, a South African associate of a British Company, began importing mercury wastes from all over the world, including the U.S., the UK and Italy. The activities of the Thor Chemical Plant resulted in pollution of the Umgeni River, including health-related problems occasioned by mercury poisoning of workers at the plant. Thor was charged with culpable homicide and other charges, and it discontinued further importation of mercury waste. In 2003, government served it a section 28 (4) Directive under NEMA 1998,

the vigour with which the SA government has pursued environmental issues ever since. Between 1980 and present day (2015), the government has adopted various strategies and policies on hazardous waste management, yet first recognising its obligations towards hazardous waste management under international environmental law.

The purpose of waste regulation under international law is to provide some control over the trade/transboundary movement of hazardous waste and to prevent pollution of common spaces such as the high seas and outer space.[20] As discussed in Chapter 3, the main international conventions on hazardous waste are the Basel Convention 1989 and the regional Bamako Convention 1991. South Africa acceded to the 1989 Basel Convention in 1994[21] but is yet to sign or accede to the Bamako Convention. It has also not signed the Basel Ban Amendment 1995, which will totally ban trade in hazardous waste from developed to developing countries.

South Africa's ratification of the Basel Convention means that it is obliged to adopt requisites laws and policies for the management of hazardous wastes in the country.[22] Finlay notes the fact that many African countries are signatories to the Basel

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requiring it to safely store the waste and clean up any and all traces of mercury contamination in the surrounding community within a specific time period. A pilot clean-up project was scheduled in 2006 to dispose of the stockpiles of mercury at the site. The pilot project was unfortunately not achieved by DEA. See Lipman, above (note 18) at 268; Mark Butler 'Lessons from Thor Chemicals: The links between health, safety and environmental protection' in Lael Bethlehem and Michael Goldblatt (eds), *THE BOTTOM LINE – Industry and the Environment in South Africa* (1997), available at *http://www.idrc.ca/EN/Resources/Publications/openebooks/442-5/index.html,* accessed on 1 October 2014. See also Environmental Justice Case Study: Thor Chemicals and Mercury Exposure in Cato Ridge, South Africa, available at *http://www.umich.edu/~snre492/Jones/thorchem.htm*, accessed on 9 August 2014.; J Glazewski 'Regulating Transboundary Movement of Hazardous Waste: International Developments and Implications for South Africa (1993) 26 (2) *Comparative and International Law Journal of Southern Africa* 234 at 235

[20] Loretta Feris and Louise Du Toit 'Land Pollution' in J. Glazewski *Environmental Law in South Africa* (2013, Service Issue 1) 21-13.

[21] South Africa acceded to the 1989 Basel Convention on 5 May 1994.

[22] Three other international conventions on hazardous substances exist, namely: the Rotterdam Convention (sets out the procedure for Prior Informed Consent PIC which promotes and enforces transparency in the importation of hazardous chemicals); Stockholm Convention on Persistent Organic Pollutants POPs (requiring member countries to phase out POPs and prevent their import or export); and the Montreal Protocol (provides for the phase out of the production of certain substances in order to protect the ozone layer). South Africa ratified the three conventions: in 1994, 2001 and 1990. See Department of Environmental Affairs *National Waste Management Strategy,* available at *http://wastepolicy.environment.gov.za/home/nwms_v1/1_4*, accessed on 01 October 2014.

Convention, leading to the '[implication] that they are to make e-waste one of their policy priorities.'[23] However, Dittke argues that international legislation as it applies to e-waste 'has, in our opinion, only limited application for present purposes in South Africa, since the majority of e-waste would probably be from local sources, as opposed to imported, old or broken electronic/electrical equipment entering the country for recycling or treatment purposes.'[24] In view of the discussions on EPR principle discussed in Chapter 2 and the influence the Basel Guideline documents may have on national governments in their application of the EPR principle to e-waste, Dittke's argument must be faulted. As noted in the earlier part of this chapter, South Africa's electrical and electronic goods are imported through direct purchase, second-hand purchase and donations from the global North.[25] By virtue of such imports, international legislation plays a significant role in e-waste management in any jurisdiction, since it is the cornerstone from which national law and policy on e-waste flows.

The next part of this chapter examine the governing structures and the purview of e-waste management in South Africa, the extent to which South Africa has considered the non-binding Basel guideline documents on the management of e-waste fractions such as mobile phones, computer equipment and general electrical and electronic equipment in adopting e-waste policy in South Africa, and the attendant implementation of e-waste as a 'priority waste.'

4.2 Governance structures in South Africa

Governance refers to a 'system of values, policies and institutions by which a society manages its economic, political and social affairs through interactions, within and among the state, civil society and the private sector.'[26] Therefore, to clarify how waste is managed in South Africa, it is important to articulate on governance.

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[23] Finlay, above (note 6) at 13.

[24] Mark Dittke 'A Review of South African Environmental and General Legislation governing e-waste' March 2007 (updated August 2009), available at *http://www.ewasa.org/downloads/files/ewasa%20legal%20review.pdf,* accessed on 16 August 2014.

[25] Odeh, above (note 8) at 340.

[26] South African Environmental Overview (SAEO) Report 2006 in Annette Naude *Conceptualizing Waste Management* (2011) 38.

South Africa is a multicultural, middle-income, developing country with abundant resources and well-developed financial, legal, communications, energy and transport sectors.[27] The country is rich in natural resources, such as gold, chromium, coal, iron ore, manganese, nickel, phosphates, tin, uranium, diamonds, platinum, copper, salt and natural gas.[28] With an estimated population of more than 54m people,[29] SA has a three tier-governing structure: national government, provincial government and local government, each with its own legislative and executive authority.[30] E-waste management which falls under the heading 'pollution control' is one which falls under national, provincial and local competence.[31] South Africa is a sovereign, secular democratic republic with a parliamentary system of government. The South African polity is governed in terms of its 1996 Constitution, with a President as Head of Government working through a Ministerial Cabinet.[32]

Although South Africa has nine provinces,[33] Johannesburg, Gauteng and the Western Cape and KwaZulu-Natal are the focus of this thesis. This is because the main e-waste recycling companies are located in Johannesburg, and Gauteng and Western Cape provinces were the focus of the researcher's study and interviews.

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[27] 'The Political Framework in South Africa – Impacts on the E-waste Recycling System,' available at *http://www.ewasteguide.info/the_political_framework_in_south_africa_impacts_on_the_e_waste_recycling_system,* accessed on 24 October 2014.

[28] Finlay and Liechti, above (note 5) at 10.

[29] See above (note 9). See also Worldometers World Population Statistics, available at *http://www.worldometers.info/world-population/population-by-country/,* accessed on 17 August 2014.

[30] Finlay and Liechti, above (note 5) at 10.

[31] See Part A, Schedule 4 and Part B, Schedule 5 of the Constitution of the Republic of South Africa, 1996.

[32] Political framework in South Africa, above (note 27).

[33] Gauteng, NorthWest, Limpopo, Mpumalanga, KwaZulu-Natal, Eastern Cape, Free State, Western Cape and Northern Cape. Gauteng appears to be the smallest in land size, but is the most industrialised and populated,[33] with most voluntary e-waste recycling companies located therein. Gauteng also has three major metropolitan areas (or 'metros') – Tshwane Metropolitan, Johannesburg City and Ekurhuleni.[33] The other six metros in South Africa are Buffalo City (East London), City of Cape Town (Western Cape), City of eThekwini (Durban), Mangaung Municipality (Bloemfontein), Msunduzi Municipality (Pietermaritzburg), and Nelson Mandela Metropolitan Municipality (Port Elizabeth). See DEA/ATE E-waste document, above (note 4) at 39; Finlay and Liechti, above (note 5) at 10.

The consumption of EEE is somehow related to the population size and the economic status of the majority of the people who live in a particular province.[34] Where a majority of the population are 'working class,' and live in urban areas, it appears that this 'class' of people are able to afford and use some EEE products, both in their households or offices/workplaces. There also appears to be a wider distribution of manufacturers/retailers of EEE in highly urbanised areas with metro status or big industrial and commercial cities such as Cape Town and Johannesburg.[35] The distribution, usage, disposal, collection and recovery of such EEE, and the roles of government and voluntary e-waste recycling companies in these two cities are examined later in this chapter.

In view of the fact that South Africa is a leader on the African continent in its drive to promote and achieve sustainable practices,[36] waste management was recognised as 'one of the critical elements of sustainable development, primarily because sound management practices contribute to sustainability.'[37] In an effort to set out a national vision for sustainable development, the DEA published a National Framework for Sustainable Development in South Africa in 2008 that recognises the need for sustainable waste management.[38] This document flows from South Africa's commitment to the principles developed at international summits and conferences on sustainable development.[39]

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[34] DEA/ATE E-waste document, above (note 4) at 39.

[35] Ibid.

[36] Lawhon, above (note 7) at 1.

[37] Department of Environmental Affairs *Waste Act Made Easy – A user friendly guide to the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)* (2011) at 6.

[38] This Framework seeks to enunciate South Africa's national vision for sustainable development and indicate strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention that will enable and guide the development of the national strategy and action plan. See Department of Environmental Affairs and Tourism, *People-Planet-Prosperity: A National Framework for Sustainable Development in South Africa* (July 2008) at 3, available at *https://www.environment.gov.za/sites/default/files/docs/2008nationalframeworkfor_sustainabledevelopment.pdf,* accessed on 16 October 2014.

[39] Feris and Du Toit 'Land Pollution' above, (note 20) at 21 – 7.

The adoption of the 1989 Basel Convention and eventual accession by South Africa made the government aware of the fact that SA was now 'inseparably linked to international policy on hazardous waste.' Consequently, the government has adopted various legislation and policy documents for the management of waste in South Africa. Existing policy documents that contribute to the effective management of waste in the country include:

i. National Waste Management Strategy 1999
ii. White Paper on Integrated Pollution and Waste Management (IP&WM) 1999
iii. National Framework for Sustainable Development 2008
iv. National Waste Management Strategy 2011.

Legislation relating to e-waste management includes:

a) The South African Constitution (Act 108 of 1996)
b) Hazardous Substances Act (Act 15 of 1973)
c) Health Act (Act 63 of 1977)
d) Environment Conservation Act (Act 73 of 1989)
e) Occupational Health and Safety Act (Act 85 of 1993)
f) National Water Act (Act 36 of 1998)
g) The National Environmental Management Act (Act 107 of 1998)
h) Municipal Services (Act 32 of 2000)
i) Precious Metals Act 37 of 2005
j) Consumer Protection Act 68 of 2008
k) Second-hand Goods Act 6 of 2009
l) National Environmental Management: Waste Act (Act 59 of 2008).

The extent to which these legislation and policy documents apply and/or influence the management of e-waste in South Africa are examined below.

4.3 Waste management strategies and policies in South Africa

4.3.1 The Waste Management Strategy 1999

A series of reports under the general title National Waste Management Strategies and Action Plans for South Africa was published in 1999.[40] The framework document, subtitled National Waste Management Strategy: Strategy formulation phase, presents a long-term plan to address waste management in South Africa, emphasising the need for integration.[41] It covers eight core aspects, including integrated waste management and planning, a waste information system, waste minimisation and prevention, recycling, waste collection and transport, waste treatment, waste disposal and implementation instruments.[42]

The NWMS 1999 first defined the shift from the control of waste to its prevention by adhering to the internationally accepted waste hierarchy principle, which promotes and encourages waste management; first, by introducing waste minimisation or reduction (cleaner production); second, by recycling and re-using waste; third, by treating waste (physical, thermal and chemical destruction); and fourth, by safety disposing of waste.[43]

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[40] Feris and Du Toit note that the series appears to be an ongoing one comprised of:

(i) National Waste Management Strategies and Action Plans for South Africa
(ii) National Waste Management Strategy, Strategy Formulation Phase, Version C, PMG 130 PSC 69, June 1999.
(iii) Action plan for Integrated Waste Management Planning: Action Plan Development Phase, Version B, PMG 131 PSC 70, June 1999.
(iv) Action Plan for General Waste Collection: Action Plan Development Phase: Version B, PMG 132 PSC 71, June 1999.
(v) Action Plan for Waste Information System: Action Plan Development Phase, Version B, PMG 133 PSC 72, June 1999. See Feris and Du Toit, above (note 20) at 38.

[41] National Waste Management Strategies and Action Plans for South Africa, Executive Summary at *(i)* and *(ii).* See also Feris and du Toit, above (note 20) at 9.

[42] Ibid at 9.

[43] The internationally accepted waste hierarchy principle, as first accepted into policy by the European Community in its Framework Directive of 1975, entails Cleaner Production (prevention, minimisation, re-use) to recycling (re-use, recovery/reclamation, and composting) to Treatment (physical, chemical or biological) to Disposal (Landfill). This hierarchy has been integrated into existing South African waste policy. See DEA State of the Environment 'Waste Management,' available at *http://soer.deat.gov.za/58.html*, accessed on 16 October 2014. See also S H H Oelofse and L Godfrey 'Defining waste in South Africa: Moving beyond the age of 'waste' (2008) 104 *South African Journal of Science,* 242 at 242-3.

Although the development and implementation of this document took longer than was expected, local authorities in South Africa were primed to understand what their legal requirements were in terms of implementing integrated waste management systems and strategies.[44] This document has now been superseded by the National Waste Management Strategy 2011, which is read in conjunction with the Waste Act 2008. This will be examined subsequently.

4.3.2 The White Paper on Integrated Pollution and Waste Management 2000

The White Paper on Integrated Pollution and Waste Management (IP&WM) is a subsidiary policy[45] applicable to all government institutions, society at large, and to all activities that impact on pollution and waste management in South Africa.[46] It consolidates upon the NWMS 1999, which forms the basis for translating the goals and objectives of the IP&WM into practice in South Africa.[47] Through the adoption of the IP&WM, the government sought to among others encourage the prevention and minimisation of waste generation and, thus, pollution at its sources; encourage the management and minimise the impacts of unavoidable waste, from its generation to its final disposal; and to ensure that any pollution of the environment is remedied by holding the responsible parties accountable.[48] The IP&WM adopted three principles specific to

[44] 'Waste Management,' above (note 43).

[45] *White Paper on Integrated Pollution and Waste Management (IP&WM)* (GN 227 in *GG* 20978 of 17 March 2000) at 10, and further supported by the NEMA 1998.

[46] Ibid at 10.

[47] Ibid at 12.

[48] Ibid at 10.

pollution and hazardous waste management, these being transboundary movement,[49] the duty of care principle,[50] and the universal applicability of regulatory instruments.[51]

The IP&WM builds on the objectives for integrated pollution and waste management set out by the White Paper on Environmental Management Policy of South Africa,[52] and is driven by a vision of achieving environmentally sustainable economic development. It promotes a paradigm shift from control of waste to its prevention as a source of pollution, as envisaged in the NWMS 1999.[53] It also views pollution prevention as one of the most effective means of eliminating costly and unnecessary waste and promote sustainable development.[54] In short, the IP&WM promotes integrated waste management, this being a holistic and integrated system and process of management aimed at pollution prevention and minimisation at source, managing the impacts of pollution and waste on the receiving environment and remedying damaged environments.[55] It further identifies seven strategic goals towards achieving this purpose – effective institutional framework and legislation; pollution prevention, waste minimisation, impact management and remediation; holistic and integrated planning; participation and partnerships in integrated pollution and waste management governance;

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[49] This means taking into account the potential transboundary effects on human health and the environment. White Paper, at 13

[50] This means that any institution that generates waste is always accountable for the management and disposal of this waste and will be penalised appropriately for any and every transgression committed. Ibid at 13.

[51] All industrial, agricultural, domestic/household and governmental operations in South Africa will be subject to the same integrated pollution and waste management regulatory system. Ibid at 13.

[52] Such objectives include the promotion of cleaner production and establishment of mechanisms to ensure continuous improvements in best practices in all areas of environmental management; and the setting of targets to minimise waste generation and pollution at source, and the promotion of a hierarchy of waste management practices, namely reduction of waste at source, re-use and recycling with safe disposal as the last resort. Ibid at 16.

[53] This focus is emphasized by the fact that municipalities now have to prepare an Integrated Waste Management Plan (IWMP) as part of their operational strategies of their Integrated Development Plans (IDP). See State of the Environment in South Africa 'Mpumalanga – Waste Management'

[54] IP&WM White Paper, above (note 45) at 22.

[55] C Bosman 'Integrated Waste Management,' in H A Strydom and N D King *'Environmental Management in South Africa* 2ed (2009) 725.

empowerment and education in integrated pollution and waste management; information management; and international cooperation.[56]

Accordingly, the IP&WM represented 'government's new thinking' towards the management of pollution and waste management at the time, moving from a previous situation of fragmented and uncoordinated pollution control and waste management to integrated pollution and waste management and waste minimisation.[57] It sought not only to implement cooperative governance in the management of same, but also to set a foundation for the future of sustainable e-waste management in South Africa.

This recognition of the need to adopt a waste management hierarchy in the NWMS and IP&WM Paper is noteworthy, particularly the recognition of resource recovery (recycling and re-use) in the IP&WM Paper. This was representative of governments' efforts to improve the management of waste and to reduce associated impacts through prevention, minimisation and re-use.[58] Nevertheless, Oelofse and Godfrey put forward a view on recycling that is a restatement of the loophole regarding the definitions of waste and non-waste in the Basel Convention (discussed in Chapter 3):

> …a serious emerging terminological and regulatory problem is being raised by increased controversy regarding potentially recyclable waste. In most existing legal definitions, the term 'waste' includes material that is technically suitable for recovery and re-use. By including these waste-streams in the definition of waste, the material becomes subject to the same regulations as other waste-streams that are not (or currently not) suitable for recovery.[59]

The accuracy of this statement with regards to the depiction of e-waste in South African waste legislation need analysis. The authors put forward the view that a successful implementation of a waste hierarchy depends on its translation into policy, strategy and

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[56] IP&WM White Paper, above (note 45) at 30.

[57] Foreword to the IP&WM White Paper at 29.

[58] Oelofse and Godfrey, above (note 43) at 246.

[59] Ibid at 245.

legislation,[60] and the efforts by the South African government to do so in the NWMS and IP&WM Paper is indicative of that. In addition, at the time of the adoption of these documents, there was no existing definition of e-waste in existing policy documents or waste legislation. Nevertheless, the government took the issue of resource recovery (recycling and re-use) seriously, recognising it as one of the methods of waste prevention in the promotion of the waste management hierarchy. Hence, the National Waste Management Strategy Implementation on Recycling was drafted by the DEA in 2005.

4.3.3 National Waste Management Strategy Implementation (NWMSI) – Recycling 2005

This Recycling Component of the NWMSI Project[61] aims to develop a realistic and practical approach to increase and extend waste recycling in South Africa, and identifies priority waste streams, one of which is e-waste.[62] New developments in the political, policy and legislation fields in South Africa at the time, i.e. the 1996 Constitution, NEMA 1998, IP&WM Paper 2000 and the NWMS 1999 resulted in a re-appraisal of the recycling situation.[63] The Strategy reiterates the importance of integrated waste management, which requires the implementation of a hierarchical approach to waste management, involving a sequential application of waste prevention, minimisation, re-use, recycling, treatment and – ultimately – disposal. Hence, recycling is an integral part of the way waste management is being implemented in South Africa.[64]

The Strategy emphasises the vision and commitment of government, civil society and business at the National Waste Summit 2001 to 'reduce waste generation and disposal by 50% and 25% respectively by 2012, and develop a plan for zero waste by 2022.'[65] The

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[60] Ibid at 242.

[61] Department of Environmental Affairs *National Waste Management Strategy Implementation South Africa – Recycling, Waste Stream Analysis and Prioritisation for Recycling* Report Number: 12/9/6, Annexure H, 4 April 2005.

[62] Executive Summary, NWMSI Recycling Report, above (note 61) at 2.

[63] Ibid at 9.

[64] Ibid at 9.

[65] The final outcome of the Summit was captured in the Polokwane Declaration on Waste Management, Polokwane, Northern Province, South Africa, 26 - 28 September 2001. It outlined the commitments of government, civil society and the business community. In order to make the Declaration a reality, a National

Polokwane Declaration represents a significant initiative by all South African stakeholders in the waste management field to improve recycling practice. Thus, this NWMSI Project works in line with and supports the Declaration, in order to grow the recycling industry in South Africa by 30% in 2012.[66]

In 2000, the DEA recommended that specific provision for recycling should be made within national framework legislation pertaining to integrated pollution and waste management, with provincial legislation and local government by-laws providing further substance and detail.[67] It further recommended that specific provision be made in the Draft Waste Management Bill at the time (now the National Environmental Management: Waste Act 2008) for, among others, the adoption of policy and guiding principles reflecting the importance of the waste management hierarchy, defining recycling requirements for particular waste streams, and requirements relating to EPR.[68] The DEA also recommended that in identifying, assessing and prioritising waste streams for recycling, the following principles, among others, must be considered:[69] the principle of full cost accounting (i.e. decisions must be based on an assessment of the full environmental cost and activities that impact on the environment);[70] the principle of inclusivity and participation (i.e. considering the interests and values of all interests and affected parties in decision-making to secure sustainable development); the principle of integration (i.e. integration of environmental, social and economic considerations in the

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Workshop was convened in Port Elizabeth in 2003, in which the implementation of the NWMS 1999 and the goals of the Declaration were discussed. The focus was on practical means to achieve the goals of the Declaration, including identifying and prioritising specific waste streams, and this is achieved within the Report. See NWMSI Recycling Report, above (note 61) at 2-3.

[66] Ibid at 9.

[67] Department of Environmental Affairs (2000d) *Starter Document for Waste Recycling: Legal Framework Document for Recycling*, Department of Environmental Affairs and Tourism, May 2000.

[68] NWMSI Recycling Report, above (note 61) at 12-13.

[69] Department of Environmental Affairs *Starter Document for Waste Recycling: A Framework for Sustainable Post-Consumer Recycling in South Africa* (2000a); NWMSI Recycling Report, above (note 61) at 14.

[70] This is usually difficult to apply in practice because the full environmental costs are usually not available. NWMSI Recycling Report, above (note 61) at 14.

achievement of sustainable development, management an execution of functions); PPP (i.e. those responsible for environmental damage must pay the repair cost both to the environment and human health, including the cost of preventative measures to prevent or reduce further pollution and environmental damage); and the use of economic instruments (to be used as incentives for recycling or to provide funding to implement recycling initiatives).[71]

The Strategy recognises that post-consumer recycling activities in South Africa are mainly undertaken by private recycling companies, especially those associated with the packaging industry.[72] It also recognises the efforts of local authorities in their establishment of voluntary drop-off facilities and buy-back centres to encourage and stimulate post-consumer recycling.[73] Further, the Strategy acknowledges the lack of a standard and/or regulated mechanism for implementing and funding recycling at the time, with most initiatives being developed on an ad hoc basis and funded by the private sector. Thus, owing to large quantities of recyclable materials in the waste arriving at landfill sites, informal salvaging is a form of income generation for the poor in South Africa.[74] It notes the environmental and health hazards of such salvaging at landfill sites and identifies the drivers and obstacles to recycling in South Africa.[75]

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[71] Ibid at 14.

[72] Department of Environmental Affairs (2000c) *Starter Document for Waste Recycling: Background Document of Post-Consumer Recycling in South Africa and Internationally*: Department of Environmental Affairs and Tourism, May 2000; NWMSI Recycling Report, above (note 61) at 15.

[73] NWMSI Recycling Report, above (note 61) at 15.

[74] Ibid.

[75] Such drivers include international and local funding sources for municipalities and other stakeholders to ensure efficient waste recycling, the need for job creation through formal recycling to discourage the poor from salvaging at landfill sites, public-private partnerships, drop-off and buy-back centres, development and implantation of industry waste management plans (IWMPs) and compliance with recycling legislation, permits and authorisations. The obstacles to recycling include limited markets for recycling; lack of competition in the recycling field, resulting in monopolistic practices; high transportation costs associated with transporting recyclables from rural areas to city centres, where private recycling companies are located; and safety aspects, i.e. flammable recyclables which endanger worker safety. See Department of Environmental Affairs (2005a) *Provincial Recycling Workshops Proceedings, Consolidated Summary Report,* National Waste Management Strategy Implementation Project, Department of Environmental Affairs, Midrand, February 2005. See also NWMSI Recycling Report, above (note 61) at 17-20.

Nevertheless, a 2002 DEA study identified certain products/waste streams to be given priority for further consideration and investigation, including electronics (CRTs, CPUs, VCRs and cell phones).[76] It noted that electronic products are readily available in South Africa either as local products or as imported goods, and the challenge will be to prioritise implementation of PS and EPR for such products, based on criteria such as the risk they pose to the safety, health and environment, and the implications of implementing PS and EPR.[77] This thesis will analyse the DEA Extended Producer Responsibility Document below.

The Strategy goes further to identify the stakeholders involved in recycling, stating that such involvement is necessary to promote and enable sustainable recycling as a means to minimise and reduce waste. The stakeholders include: waste generators (household, retailers, business and industries, service sector); waste collectors and retailers (municipalities, private waste management service providers, SMEs and informal sector); waste brokers/agents (entrepreneurs who buy and sell recyclable materials); waste converters and recyclers (those who buy recyclable material and alter it into a form that is readily useable by a manufacturer); end-use markets (consumers i.e. the public, and businesses who purchase recovered/converted materials to make new feedstock); waste disposal entities (those who dispose of waste residues remaining after the recyclables have been removed, i.e. private sector and municipalities), policy-makers (three spheres of government); NGOs, community and consumer groups; and research institutions. The Strategy emphasises that the success of recycling lies in the awareness of stakeholders of the environmental benefits of sustainable recycling.[78]

Although the Strategy is not a binding legal document, the discussion on recycling above emphasises the importance of this waste management technique and the South African government's recognition of this fact. It also buttresses the fact that recycling presents one of the most effective and sustainable means for managing e-waste. Hence,

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[76] Department of Environmental Affairs *Study on Product Stewardship and Extended Producer Responsibility (EPR)* (2002). See also NWMSI Recycling Report, above (note 61) at 32.

[77] NWMSI Recycling Report, above (note 61) at 33.

[78] Ibid at 33.

most of the Strategy's recommendations regarding recycling to be placed in a national waste framework law were considered and adopted into the current Waste Act 2008. This need for sustainable recycling is further underscored in the 2005 DEA Extended Producer Responsibility Status Quo Report. This Report is symbolic because it shows government's recognition of EPR and the necessity of its application to specific waste streams such as e-waste.

4.4 The advent of the EPR principle in South Africa

4.4.1 NWMSI Recycling Extended Producer Responsibility Status Quo (SQ) Report 2005

In 2005, the DEA prepared a report to review the status quo of EPR, both internationally and in South Africa.[79] The NWMSI Recycling Report (hereafter, the Report) investigates EPR as a mechanism for bringing about waste reduction in South Africa, through the minimisation, re-use and recycling of waste products.[80] This Report is not a policy document, but a guide towards effective implementation of EPR initiatives to specific waste streams, including e-waste.

The Report notes the formal introduction of the concept of EPR by the Swedish government in 1975 with the following official statement:

> The responsibility, that the waste generated during the production processes could be taken care of in a proper way, from an environmental and resource saving point of view, should primarily be of the manufacturer. Before the manufacturing of a product is commenced it should be known how the waste which is a result of the production process should be treated, as well as how the product should be taken care of when discarded.[81]

The Report adopts and relies on Haskell's definition of the concept, which lends it a general description:

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[79] Department of Environmental Affairs (2004b) *Extended Producer Responsibility: Status Quo Report,* Department of Environmental Affairs and Tourism, Pretoria, October 2004.

[80] Executive Summary, Status Quo Report.

[81] SQ Report, above (note 79) at 1.

> pollution prevention policy that focuses on whole product systems rather than individual production facilities. The responsibility for the product is therefore, broadened beyond the emissions and effluents generated by the extraction or manufacturing process, to also include the management of the product once it is discarded. EPR is based on the premise that the primary responsibility for waste generated during the production process (including extraction of raw materials) and after the product is discarded, is that of the producer of the product.[82]

The Report sets 'the ultimate goal of EPR [as] sustainable development through environmentally responsible product development and product recovery... Hence, the overall goals are cleaner production and waste prevention.'[83] It also relies on the EPR matrix set out in Chapter 2, i.e. Lindhqvist's postulation that a producer must bear legal liability, economic/financial responsibility, physical/environmental responsibility and informative responsibility towards a product (EEE) from cradle to cradle. In consonance with the EPR matrix and the methodology type through which the EPR principle can be applied in any jurisdiction, the Report also notes three policy instrument categories that can be initiated by government to encourage product responsibility: regulatory instruments (e.g. mandatory take-back, minimum recycled content standards, disposal bans and restrictions, and product bans and restrictions); economic instruments (ADFs, deposit/refund systems); informative instruments (environmental information labelling: energy efficiency, CFC content, recycled content, product hazard warnings and product durability labeling).[84]

As stated in Chapter 2, the economic/financial responsibility that should be borne by an EEE producer may be implemented through a variety of financial instruments. This Report recognises this and further alludes to shared responsibility atypical of product stewardship, noting that a number of instruments are being employed to shift

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[82] D Haskell *What is Extended Producer Responsibility* (2004) Edited for distribution to the Zero Waste Network Wanganui, cited in SQ Report, ibid at 2.

[83] Ibid. SQ Report, above (note 79) at 2.

[84] SQ Report, above (note 79) at 2.

responsibility for product waste from government and taxpayers to producers and consumers. Such policy instruments include:[85]

a) Deposit refund systems, which can encourage re-use and can at least provide a monetary incentive to the consumer to return the product or package, and an infrastructure for its collection and recycling;

b) Target product taxes, which influence the choice of materials used;

c) ADFs, which are designed to influence the choice of materials used, and can generate substantial funds that may or may not be used by government for environmental projects. They are sometimes refunded to consumers, but generally the consumer is unware of the fee (e.g. fee for refrigerators in Austria and refundable disposal fees on automobiles in Sweden); and

d) Voluntary agreements supported by regulations, which are used to phase out undesirable materials, encourage design for recyclability or ensure high rates of re-use or recycling.

The Report further acknowledges that the EC is the major driving force for EPR and its producer responsibility mandate for EOL electronics. The Report notes the importance of the MPPI 2002 (discussed in Chapter 3), which advocates future partnerships between the Basel Convention and electronics industry, with South Africa as a participating country and the world's leading mobile phone manufacturers participating in the MPPI.[86]

Further, the Report mentions that electronic waste was recommended as a priority waste stream in the NWMSI Report, but states that a brief overview of EPR legislative instruments worldwide showed a dominance of packaging laws.[87] Hence, in the DEA review on Product Stewardship,[88] it was recommended that legislation and policy arrangements needed to be strengthened by the introduction of product-based legislation

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[85] Ibid at 3.

[86] SQ Report, above (note 79) at 11.

[87] The Report summarised the results of Schwartz and Gattuso's 2002 review, which identified the reasons why developing countries have limited EPR legislation, ranging from uncertainty regarding EPR, to institutional and infrastructural limitations, to social limitations such as poverty and unemployment. See Schwartz & Gattuso, *Extended Producer Responsibility – Re-examining its role in environmental progress*, (2002) in SQ Report, above (note 78) at 19.

[88] Department of Environmental Affairs (2002) *Study of Product Stewardship*, Department of Environmental Affairs and Tourism, Pretoria.

or policy that is in line with international practice. The South African government responded to this by introducing Plastic Bag Regulations[89] to demonstrate its willingness to implement legislation for EPR. However, the Report notes that the adoption of such a Regulation is indicative of the need to more carefully consider the implications of legislating specific products/commodities for EPR and the crucial need for active and extensive stakeholder engagement.[90] It further relies on Schwartz and Gattuso's criteria for evaluating the necessity of implementing EPR which, they say, must be based on a holistic assessment of every product.[91]

Consequently, a NWMSI Project Inception Workshop held in 2004 raised concerns about EPR,[92] including clarity on how to define *producer*, creating a shared understanding of the concept of EPR among stakeholders; the use of EPR as a means to emphasise waste minimisation; banning certain waste streams from the landfill sites and create incentives to facilitate recycling.[93] The Workshop proposed that the SA authorities force international producers to apply international best practices when operating in the country, and that when products or commodities are imported, the importer should be charged an appropriate waste management levy or tax for the imported products. Such international best practices include strict monitoring of impacts of such products, and the PPP applied in the case of significant pollution.[94] The concerns raised at the Workshop more 10 years ago were accurate, particularly in view of the current situation that pertains

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[89] The Plastic Bag Regulations 2002 were promulgated under s 24 (d) of the ECA 1989, and the Regulations prohibit the production and distribution of plastic bags of a certain thickness. See Plastic Bag Regulations in GN 7348 *GG* 23393 of 9 May 2002. See also SQ Report, above (note 79) at 14.

[90] SQ Report, above (note 79) at 20.

[91] Such an evaluative criterion must ask certain questions such as: *What evidence is there to show trends in product eco-efficiency (energy and materials use per unit of output)? What are the relative influences of product design, demographic trends, GDP growth, changes in per capita income and other factors on materials and energy use and environmental impacts? What are the key environmental impacts of different product categories? What criteria influence product design and process decisions?* See Schwartz & Gattuso, above (note 87) at 19; SQ Report, above (note 79) at 21-22.

[92] Department of Environmental Affairs *National Waste Management Strategy Implementation South Africa – Inception Phase, Inception Report,* Report Number 1, DEA Report Number: 12/, 15 June 2004 at 6.

[93] SQ Report, above (note 79) at 22.

[94] Ibid.

in developing countries, where the importer is the key actor in the e-waste trade. This clarity and distinction between a *producer* and *importer* and the imposition of such an import levy on the importer in implementing the EPR principle is an important factor in a developing country context. Although the concerns raised at the Workshop were influenced by a study of developed countries' best practices for products, it was a premonition of events that would apply to e-waste management in South Africa, as will be discussed subsequently.

The Report went further to identify e-waste as a potential priority candidate for EPR and highlighted the E-Waste Initiative (the Initiative), launched in 2004 in South Africa in partnership with the Swiss Government.[95] The initiative's findings identified the lack of legislation regarding e-waste handling or recycling, since most of the e-waste was stored and eventually disposed of in municipal landfill sites.[96] The Initiative also noted the lack of organised take-back systems or licenses for sorting or dismantling e-waste, a function performed by scrap metal merchants.[97] The Initiative recommended a cradle-to-cradle approach, i.e. a WEEE system, which encourages the maximisation of repair, re-use and recycling, effectively reducing the amount of e-waste going to landfill.[98] The Report concludes by reiterating that there is no single model of EPR that is used universally, and that an EPR process for South Africa would need to be developed on a product-specific basis. As a result of a DEA Product Stewardship Study and consultation with the relevant role players and stakeholders through the NWMSI Project Inception Workshops and Provincial Recycling Workshops above, e-waste was prioritised for

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[95] Basel (2005) *E-Waste Working Group: Partnerships*, Basel Convention Regional Centre, Pretoria; EMPA (2005) *Knowledge Partnerships with Developing and Transition Countries in E-Waste Recycling*, Swiss Federal Laboratories for Material Testing and Research.

[96] The initiative notes that some commercial manufacturers and distributors pay for the disposal of the e-waste in permitted hazardous waste disposal sites, obtaining a certificate of safe disposal from the contractors that carry out that work. Waste originating from these sources is thus generally buried inaccessibly in permitted hazardous waste disposal facilities (e.g. Holfontein H:H Landfill in Gauteng). See SQ Report, above (note 79) at 26.

[97] The initiative also recognises voluntary recycling companies such as Company B Recycling Company and Company A Electronic Recyclers. The interview with Company A is presented and incorporated later in this chapter.

[98] SQ Report, above (note 79) at 26.

further investigation and implementation of EPR. The Report noted the possibility of learning from the Plastic Bag Initiative, which can be used to guide more effective and efficient implementation of future EPR initiatives for other products such as EEE.[99]

The combined effect of the NWMSI Workshops, the NWMSI Waste Stream Recycling and Prioritisation, the EPR Status Quo Report 2005 and other DEA documents mentioned above indicates the SA government's recognition of the EPR principle as an integral part of e-waste management in SA. The DEA also considered the recommendations regarding EPR set out for government in the Basel Mobile Phone Partnership Initiative (MPPI) Guidance Document[100] in preparing the Report. This Report spurred the government to set out legislation on e-waste, and modalities for effective management through implementation of EPR. These initiatives also recognise the social, economic and environmental benefits of the concept in e-waste management, hence the reiteration throughout this thesis that the concept should and must be utilised as one of the most effective ways of sustainably managing e-waste. As a result, the recommendations and observations in these Reports were noted and adopted as part of the main provisions of the National Environmental Management: Waste Act 2008. The extent to which the recommendations set out in the policies and strategies above have been subsumed into national legislation on general waste management, and their application to e-waste is now analysed.

PART A MANDATORY REGULATION IN SOUTH AFRICA

4.5 National legislation on environmental management and e-waste

4.5.1 South Africa's Constitution

The Constitution of South Africa 1996[101] is regarded as 'the supreme law of the Republic… and the obligations imposed by it must be fulfilled.'[102] It lists environment

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[99] See the Plastic Bag Regulations, above (note 89). See also SQ Report, above (note 79) at 14.

[100] See Chapter 3.

[101] Act 106 of 1996.

[102] Section 2 of the Constitution.

and pollution control as functional areas that fall under concurrent national and provincial legislative competence.[103] The Constitution regards environmental protection as a fundamental right, and section 24 is explicit in its provisions:

> Everyone has the right
>
> a. to an environment that is not harmful to their health, or well-being;
> b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
> i. prevent pollution and ecological degradation;
> ii. promote conservation; and
> iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

This right, encapsulated in the Bill of Rights, may be limited to the extent that the limitation is reasonable and justified, i.e. according to the availability of government resources.[104] Nevertheless, the provisions of this section emphasise the need for government to protect the environment so that individuals can enjoy the right they are entitled to. It is assumed that the above requirement for government to adopt 'reasonable legislative and other measures to prevent pollution,' means that there is an obligation on government to adopt requisite legislation for e-waste management and ensure effective implementation of same. Yacoob, J emphasises this:[105]

> The State is required to take reasonable legislative and other measures. Legislative measures by themselves are not likely to constitute constitutional compliance. Mere legislation is not enough. The State is obliged to achieve the intended result, and the legislative measures will invariably have to be supported by appropriate, well-directed policies and programmes implemented by the Executive. These policies and programmes must be reasonable both in their conception and implementation… An otherwise reasonable programme that is not implemented reasonably will not constitute compliance with the State's obligations.

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[103] Schedule 4 of the Constitution.

[104] Naude, above (note 26) at 39.

[105] *Government of South Africa and Others v Grootboom and Others* 2001 (1) SA 46 (CC) par [42].

Therefore, the Constitutional provision on the above environmental right is the foundation from which all other environmental and waste legislation flows. Nevertheless, before the adoption and encapsulation of this environmental right in the Constitution, South Africa's government recognised the need to adopt legislation towards the importation and exportation of goods as well as general waste management. The ambit of such legislation as it relates to e-waste is investigated below.

4.5.2 The Customs and Excise Act[106]

The Customs and Excise Act seeks to control the importation, exportation, transit and coastwise carriage of goods entering or exiting South Africa.[107] It provides that 'any person entering or leaving the Republic shall, in such a manner as the Commissioner of the South African Revenue Service may determine, unreservedly declare, at the time of such entering or leaving, all goods (including goods of another person upon his person or in his possession which… are prohibited, restricted or controlled under any law…'[108] While it can be implied from these provisions that such goods can include EEE, it appears that the issue of EEE, e-waste usage and trade from developed to developing countries was not yet a recognised international issue at the time this Act was adopted. However, the Act has some foresight in providing a definition of an *importer*, which it defines as:[109]

> any person who, at the time of exportation
> a) owns any goods imported;
> b) carries the risk of any goods imported;
> c) represents that or acts as if he is the importer or owner of any goods imported;
> d) actually brings any goods into the Republic;
> e) is beneficially interested in any way whatever in any goods imported;
> acts on behalf of any person referred to in paragraph (a), (b), (c), (d) or (e).

[106] Act 91 of 1964.

[107] Section 15 of the Act.

[108] Section 15 (1) *(a) (iii)* of the Act.

[109] Section 1 of the Act.

This Act can be read in conjunction with the International Trade Administration Act.[110] The Minister of Trade and Industry is also empowered to issue regulations to ban the importing and exporting of specified goods or class of goods such as EEE, or to require that they adhere to conditions stated in a permit the Commission issues.[111] The definition of an importer in this Act can be utilised in application of EPR to e-waste management in South Africa. While South Africa is not a target dumping site for used EEE and e-waste, it is important that an importer of new or used EEE be clearly delineated, in order to ensure effective application of the EPR matrix in this jurisdiction, in accordance with the recommendations of the EPR Status Quo Report above.

The systems for controlling the importing and exporting of e-waste are integrated with the provision of the International Trade Administration Act,[112] which creates a permit system to control the importing and exporting of goods specified by regulations. This system falls under the DTI directorate called ITAC, the primary function of which is to administer the provisions of the International Trade Administration Act.[113] The Act also prohibits *dumping*, i.e. the introduction of goods into the commerce of the Republic or the Common Customs Area,[114] at an export price that is less than the normal value of those goods, in terms of section 32(2)(*a)*.[115] This provision is noteworthy and can be utilised as

[110]Act 71 of 2003.

[111] Section 6 of the ITAC 2003. The Commission here means the International Trade Administration Commission established by section 7 of the Act.

[112] Act 71 of 2003.

[113] NWMS 2011, above (note 16) at 67.

[114] This means the combined areas of the members of the Southern African Customs Union (SACU). See section 1 of ITAC.

[115] Export price under this section, subject to other sub-sections, refers to the price actually paid or payable for goods sold for export, net of all taxes, discounts and rebates actually granted and directly related to that sale. Sub-section 5 provides that, when evaluating an application concerning dumping, the Commission must determine the export price for the goods in question on the basis of the price at which the imported goods are first resold to an independent buyer, if applicable, or on any reasonable basis. Sub-section 6 applies to any investigation of dumping, if in respect of the goods concerned, a) there is no export price as contemplated in the definition of dumping; b) there appears to be no association of compensatory arrangement in respect of the export price between the exporter or foreign manufacturer concerned and the

a strong deterrent against future importation and dumping of e-waste under the guise of shipment of used EEE for re-use or materials recovery in SA. The researcher sought an interview with the ITAC department for clarification regarding any existing cases of such dumping or illegal exportation of unregistered WEEE, but consent had not yet been granted at the time of submitting this thesis.

4.5.3 The Hazardous Substances Act[116]

This Act, administered by the Department of National Health, was adopted to provide control over hazardous substances that may cause injury, ill health or death of human beings by reason of their toxicity, corrosiveness or sensitivity, among others. It provides for the control of certain electronic products, 'prohibit[ing] and control[ling] the importation, manufacture, sale, use, operation, application, modification, and disposal or dumping of such substances and products.'[117]

This Act is important, particularly because it regulates electronic products. It provides for four groups of hazardous substances, one being electronic products.[118] The Act defines electronic products and appliances,[119] and the attendant definitions are

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importer or the third party concerned; or c) the export price actually paid or payable is unreliable for any other reason.

[116] Act 15 of 1973.

[117] Introduction/Long Title of the Act.

[118] Group I and II hazardous substance refer to toxic substances (section 2(1) (a), Group III hazardous substances relate to substances in electronic products (section 2 (1) (b) and Group IV hazardous substance means radioactive material except a nuclear installation. Group IV is regulated under the Nuclear Energy Act 46 of 1999 and the National Nuclear Energy Regulator Act 27 of 1999.

[119] An electronic product refers to:

a) any manufactured product which, when in operation, contains or acts as part of an electronic circuit; and
    i. emits (or in the absence of effective shielding or other controls would emit) electronic product radiation; or
    ii. would, as a result of the failure or breakdown of any built-in safety measure or shielding, pose an electrical, mechanical, chemical, biological, ergonomic or other hazard, or cause excessive temperature, excessive pressure or ignition of flammable material, which may cause injury, ill-health or death to human beings; or

b) any manufactured article which is intended for use as a component, part or accessory of a product described in paragraph (a) and which, when in operation
    i. emits (or in the absence of effective shielding or other controls would emit) such radiation; or

comprehensive enough for an electrical or electronic equipment to fall within its scope. The Act is also similar in form to that of the European Union WEEE Directive 2012 and the Restriction on Hazardous Substances (RoHs) Directive 2011 (discussed in Chapters 2 and 3.

The Act is also read in conjunction with the Customs and Excise Act 1964. It requires that if any grouped hazardous substance is, in terms of section 107(2)*(a)* of the 1964 Act,[120] controlled by the Commissioner for Customs and Excise because, if he or she is not satisfied that the importation of electronic products under the Hazardous Substances Act have been complied with, he or she may allow such substances to pass from his or her control. Such substances may pass from his or her control, provided they are detained at the approval of the Director-General of National Health and Population Development, and at the expense, risk and control of the importer, for examination and analysis.[121] If an electronic product is examined or analysed after being detained and it appears that it may not be imported, the Director-General may, in writing and at his or her discretion, direct that such substances/products be either confiscated or destroyed; returned to the port of shipment or place of origin imported on compliance by the importer with such conditions as may be specified; or be dealt with or disposed of.[122]

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would, as a result of the failure or breakdown of any built-in safety measures or shielding, pose an electrical, mechanical, chemical, biological, ergonomic or other hazard, or cause excessive temperature, excessive pressure or ignition of flammable material, which may cause injury, ill-health or death to human beings.

An appliance means 'the whole or any part of any implement, machine, instrument, apparatus or other object used or capable of being used for, in or in connection with the manufacture, treatment, packing, labelling, storage, conveyance, preparation, serving or administering of any grouped hazardous substance' (i.e. electronic products in this case).' See section 1 of the Act.

[120] Section 107 (a) provides that the manufacturer of any goods or materials used in the manufacture of such goods shall register with the Commissioner of SARS, comply with such conditions of manufacture, keep records and furnish all certificates and documents which the Commissioner may require in respect of such goods and services.

[121] An importer includes any person who, whether as owner, consignor, consignee, agent or broker, is in possession of or in any way entitled to the custody or control of any grouped hazardous substance imported. Section 1 and 12 (1) of Hazardous Substances Act.

[122] Section 12 (3) *(a)* - *(d)* of the Hazardous Substances Act.

The inclusion of this section 12 provision into the Hazardous Substances Act signifies government's recognition of the need to regulate and control importation of hazardous substances that are and may be contained in electronic products, in a bid to protect human health, and ultimately the environment.[123] It differs from the RoHS Directive II; while the Act prohibits among others the importation, sale, disposal or dumping of certain hazardous substances and electronic products, the RoHS Directive II prohibits the *usage* of specific hazardous/toxic substances in the *manufacture* of EEE by producers in the EU. The RoHs Directive implicitly embodies the physical/environmental responsibility required of a producer under the EPR matrix, while the Hazardous Substances Act prohibits the importation of such substances or electronic products that are not in conformity with the Act. This Act is important in the management of EEE in South Africa, as its existence is indicative of government's willingness to ensure imports of EEE are carried out in a transparent manner.

4.5.4 The Consumer Protection Act[124]

This Act (hereafter, CPA) seeks to 'promote and advance the social and economic welfare of consumers in South Africa…' using various parameters.[125] The CPA introduces the EPR principle into the realm of consumer protection law via its section 59.[126] It does not attempt to regulate EPR in the CPA, but chooses to do so by way of existing legislation

[123] Other legislation relating to protection of human health and the environment, particularly with regards to: a) health and safety at work – ss 10 (1) and 43 (1) *(b) (i)-(iii)* of the Occupational Health and Safety Act No. 85 of 1993; b) investigation of any existing condition which violates the constitutional environmental right, constitutes pollution detrimental to health, or is likely to cause a health nuisance, and/or adoption of regulation which are relevant to waste management - ss 80, 81 and 83 (1) of the National Health Act No. 63 of 1977; c) role of municipalities in regulating and controlling solid waste management – s 84(1) of the Municipal Structures Act No. 117 of 1998; and d) provision of municipal services in a manner aimed at ensuring that: a) the risk of harm to the environment and to human health and safety is minimised to the extent reasonably possible under the circumstances; b) the potential benefits to the environment and to human health and safety are maximised to the extent reasonably possible under the circumstances; and c) legislation intended to protect the environment and human health and safety is complied with. – ss. 1 and 74 (1) (h) Municipal Systems Act No. 32 of 2000,

[124] Act 68 of 2008.

[125] Section 3 of the CPA 2008.

[126] Loretta Feris 'Section 59' in T Naude and S Eiselen (eds) *Commentary on the Consumer Protection Act* (2015) at 1.

that already regulates waste management,[127] i.e. the Waste Act 2008. Thus, the CPA implements EPR by placing an obligation on the *supplier* of goods, components, etc., the disposal of which is prohibited in the common waste collection system, to consumers, to accept the return of those goods, etc. without charge to the consumer, irrespective of whether that person supplied the particular object to that particular consumer.[128] It is important to note that the supplier may not charge the consumer for acceptance of the returned goods, and thus, cannot charge any extra levy on goods covered by this provision. In exercising this obligation, the supplier will need to ensure that it creates collection points or collection facilities for the return of goods.[129]

The CPA also extends the obligation to accept the goods or components further up the supply chain and places a similar duty on producers, importers and distributors of such goods.[130] In line with the principle of EPR, the producer is ultimately held responsible for safe disposal on such goods and must dispose of it in a way that would minimise harmful impacts on the environment.[131] While the CPA embodies the take-back mechanism atypical of the EPR principle, the obligation on the supplier, producer, importer and distributor does not include the imposition of a financial levy on consumers. The implementation of the EPR matrix in Chapter 2 envisages the imposition of financial instrument or mechanism on the producer of goods, such obligation primarily extended to the consumer where necessary. Under the CPA, the entities mentioned are to concern themselves with the proper disposal of the goods, components, etc. and must create collection points/recycling facilities for the return of such goods. The achievement of such is to be carried out under the guise of the Waste Act, which already includes EPR measures for waste management. Thus, the inclusion of the CPA in this part of the chapter serves to

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[127] Ibid.

[128] See section 59 (1) *(a)* of the CPA 'common waste collection system' is not defined in the CPA or Waste Act 2008. It is therefore assumed that it refers to the collection, transport, and landfilling of general waste as exercised primarily by local government in terms of the Waste Act.; Feris, above (note 125) at 3.

[129] Feris, above (note 126) at 3.

[130] Ibid.

[131] Where the goods are disposed outside the country, the importer and/or distributor is clothed with this responsibility.

highlight the existence of EPR in other legislation, and government's tactical approach in ensuring that disposal of goods, components, etc. are carried out in such ways as to minimise harmful impacts on the environment.

4.5.5 The Precious Metals Act[132]

This Act prohibits the acquisition, possession or disposal of any unwrought or semi-fabricated precious metal, except if such a person is in possession of a refining license or precious metal beneficiation license.[133] The Minister of Mineral Resources is also empowered to make regulations regarding, among others, the prevention of illegal acts pertaining to precious metals.[134] Although neither the Act nor the regulations expressly define *illegal acts*, it may be assumed that illegal acts may include the shipment of used EEE for materials recovery in South Africa, or the crude burning or leaching of precious metals from PCBs or PWBs. This legislation therefore provides a legal basis for the proper extraction of precious metals from EOL EEE and must be adhered to by e-waste recycling companies and informal recyclers.

4.5.6 The National Environmental Management Act[135]

The National Environmental Management Act 1998 (NEMA) was passed on 19 November 1998 and came into effect on 29 January 1999.[136] NEMA establishes parameters and guidelines for environmental governance in South Africa and serves as the overarching framework for environmental management legislation. It contains several environmental management principles that provide the basis for integrated environmental

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[132] Act 37 of 2005.

[133] See sections 4, 5, 7 and 8 of the Act.

[134] Section 23 (1) (c). The Minister issued Precious Metals Regulations in GN 570 *GG* 30061 of 9 July 2007. These regulations were amended in GN R737 *GG* 38014 of 22 September 2014.

[135] Act 107 of 1998.

[136] NEMA 1998.

management and decision-making in the country.[137] Such principles include the precautionary principle and the PPP (encapsulated in EPR).[138]

The Act is noteworthy for its recognition of the concept and requirements of sustainable development. It is defined as 'the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.'[139] Section 2 contains the principles for sustainable development and is used for principles/guidelines in all environmental decisions/authorisations, etc. The principles apply throughout South Africa to all organs of state alongside all other relevant considerations in the Bill of Rights,[140] and serve as the general framework within which environmental management plans must be formulated.[141]

NEMA defines pollution to include 'the storage or treatment of waste,'[142] and as one of the requirements of sustainable development, deems it relevant that 'waste [be] avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.'[143] By this provision, NEMA appears to lay a solid foundation for sustainable integrated waste management.[144] NEMA's recognition of this need to manage waste sustainably almost two decades ago emphasises the assertion of this thesis that the South African model provides a reliable model for its counterparts in the sub-Saharan African region.

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[137] H A Strydom and N D King *'Environmental Management in South Africa* 2ed (2009) at 201.

[138] Section 2 (4) (a) (vii) and Section 2 (4) (p) of NEMA.

[139] Preamble to NEMA 1998.

[140] Section 2 (1) *(a)*. Naude, above (note 26) at 40.

[141] Section 2 (1) *(b)*.

[142] Section 1 (1) *(xxiv)*.

[143] Section 2 (4) (a) *(iv)*.

[144] Bosman, above note (55) at 735.

NEMA also imposes a duty of care and remedying of environmental damage. Where an individual, organisation or company has the potential to cause or may cause 'significant pollution or degradation of the environment,' it must take 'reasonable measures' to prevent such pollution or degradation from occurring, continuing or recurring.[145] Pollution or degradation that cannot be prevented or are authorised by law must be minimised or rectified.[146] Section 28 (1) obligates a polluter to take reasonable measures to prevent further pollution of the environment, and where such pollution cannot be reasonably avoided or stopped under law, the polluter is to take steps to minimise and rectify such pollution. Section 28 (4) serves as further notice to a polluter who has failed to take the measures set out in (1) of the section to commence taking specific reasonable measures before a given date, to diligently continue with those measures, and to complete them before a specified date. The combined provisions of these sections clearly encapsulate the PPP, which is embedded in the EPR principle. This legislation, which is the umbrella legislation on environmental management in South Africa, provides a roadmap for present and future regulation on e-waste in South Africa. It distinctly places the responsibility for pollution which may arise from e-waste usage on the polluter, who in the EPR context is the producer of EEE.

4.5.7 The Environment Conservation Act[147]

The statutory environmental policy declared under the Environmental Conservation Act (ECA) contains provisions relating to integrated waste management and pollution control.[148] It vetoes the importation of hazardous waste into South Africa for disposal except it is in accordance with international agreements.[149] It was also the first South

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[145] Such *reasonable measures* may include investigation, assessment and evaluation of the impacts of the harm on the environment, inform and educate employees about the environment risks of their work and the manner in which their tasks should be performed to prevent significant pollution or degradation of the environment; eliminate any source of the pollution or degradation or remedy the effects of the pollution or degradation. See section 28 (1) and (2) and (3).

[146] Naude, above (note 26) at 40.

[147] Act 73 of 1989.

[148] General Policy in terms of the ECA, GN 51 in *GG* 15428 of 21 January 1994. See also Feris and Du Toit, above (note 20) at 59.

[149] Ibid.

African law to require landfill sites to be permitted and makes specific reference to waste disposal in section 20.[150]

While the ECA has now largely been replaced by NEMA 1998, some of its provisions remain in force.[151] The ECA identified *waste* as one of the activities with detrimental effects on the environment, and granted the Minister the discretion to make regulations on waste management, including modifications in the design and marketing of products; modifications to manufacturing processes; and the use of alternative products.[152] Two such regulations adopted under the ECA include the Asbestos Regulations[153] and the Plastic Bag Regulations.[154] However, the definition of waste under the ECA has been deleted by the National Environmental Management: Waste Act No. 59 of 2008. The ECA's section 20 (provision on waste management) and section 24 (regulations regarding waste management) have also been repealed as per Schedule 2 of Act 59 of 2008.[155]

Section 31A of the ECA, which has not been repealed, empowers the Minister, competent authority or relevant government institution to act if '…any person performs any activity as a result of which the environment is or may be seriously damaged,

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[150] The first set of minimum requirements for waste disposal to landfill was developed and published in 1998, but all hazardous waste classified under these requirements have now been re-classified under the Waste Classification and Management Regulations, in GN R634 *GG* 36784 of 23 August 2013.

[151] For example, waste management permits obtained under section 20 remain valid under the Waste Act 2008 discussed below. The Waste Tyre Regulations discussed below are also made pursuant to section 24B of the ECA.

[152] Section 21 and 24 of the ECA 1989. These provisions have been repealed by section 50 (2) of NEMA 1998.

[153] Regulations for the Prohibition of the Use, Manufacturing, Import and Export of Asbestos and Asbestos containing Materials were published in GNR 341 in *GG* 30904 of 28 March 2008, in accordance with section 24B of the ECA.

[154] Plastic Bag Regulations, above (note 89).

[155] See Environment Conservation Act 73 of 1989 (current version applicable from 18 September 2009 to date of commencement of the National Environmental Laws Amendment Act 14 of 2009).

endangered or detrimentally affected…'[156] The Minister is also empowered to direct such person(s) to cease such activity or take such steps as may be deemed fit.[157]

4.5.8 The National Environmental Management: Waste Act[158]

The Waste Act 2008 is a framework legislation developed under NEMA. Its overall purpose is to change the law regulating the management of waste in order to protect the health of people as well as the environment. This purpose is achieved by including minimum requirements for compliance with regards to any person who undertakes an activity that produces waste or a person who handles any waste that has already been produced.[159] The Act has been described as historic, because it is the first time in South Africa that legislation has been used to drive a waste minimisation approach.[160] Its provisions are applied in conjunction with the National Waste Management Strategy, which was adopted in 2011 as a legislative requirement of the Waste Act 2008.[161] It is an institutionally inclusive strategy because its achievement relies on participation by government, private sector and civil society.[162] The NWMS is subject to review within a five-year interval.

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[156] S 31A (1) of the ECA; Feris and Du Toit, above (note 20) at 21-59.

[157] S 31A (1) (a)-(b), Feris and Du Toit, ibid.

[158] Act 59 of 2008.

[159] Obed Baloyi (Chief Ed.) 'Waste act Made Easy – A user friendly guide to the National Environmental Management Waste Act 2008 (Act No. 59 of 2008) January 2012 at p. 8.

[160] Finlay and Liechti, above (note 5) at 15.

[161] The purpose of the National Waste Management Strategy is to achieve the objects of the Waste Act and is structured around a framework of eight goals; namely: the promotion of waste minimisation, re-use, recycling and recovery of waste (Goal 1); ensure the effective and efficient delivery of waste services (Goal 2); grow the contribution of the waste sector to the green economy (Goal 3); ensure that people are aware of the impact of waste on their health, well-being and the environment (goal 4); achieve integrated waste management planning (Goal 5); ensure sound budgeting and financial management for waste services (Goal 6); provide measures to remediate contaminated land (Goal 7); and establish effective compliance with and enforcement of the Waste Act (Goal 8). See Department of Environmental Affairs *National Waste Management Strategy* (NWMS) November 2011, above (note 16) at 6-7.

[162] NWMS, above (note 16) at 8.

Though the Act does not specifically refer to e-waste, it provides several definitions that can be read to have an impact on e-waste, such as:

a) 'acceptable exposure' (i.e. the maximum permissible concentration of a substance, which is relevant when collecting or recycling e-waste in volume);[163]
b) 'best practicable environmental option' (i.e. the option that provides the most benefit or causes the least damage to the environment in the long and short term; its relevancy is important in the context when the latest technologies for recycling e-waste may not be available);[164]
c) hazardous waste and inert waste (which includes waste that does not undergo any significant physical, chemical or biological transformation after disposal,[165] and which may have some relevance to some e-waste fraction);
d) extended producer responsibility measures (i.e. measures that extend a person's financial or physical responsibility for a product to the product's post-consumer stage);[166] recovery (i.e. the controlled extraction or retrieval of an substance, material or object from waste);
e) recycling (i.e. a process where waste is reclaimed for further use, including the separation of waste from a waste stream for further use and the processing of the separated material as a product or raw material); and
f) re-use (i.e. the utilisation of the whole, a portion of or a specific part of any substance, material or object from the waste stream for a similar or different

[163] Section 1 of the Waste Act 2008; Finlay and Liechti, above (note 5) at 15.

[164] Section 1; Finlay and Liechti, above (note 5) at 15.

[165] Section 1 of the Waste Act 2008. It must be noted that the definition of hazardous waste and inert waste under the Waste Act 2008 has been amended by the National Environmental Management: Waste Amendment Act No. 26 of 2014. The definition of these categories of waste can now be found in Schedule 3 of the Amendment Act 2014.

[166] Such measures include a) waste minimisation programmes; b) financial arrangements for any fund that has been established to promote the reduction, re-use. Recycling and recovery of waste; c) awareness programmes to inform the public of the impacts of waste emanating from the product on health and the environment; and d) any other measures to reduce the potential impact of the product on health and the environment. See section 1 of the Waste Act 2008.

purpose without changing the form or properties of such substance, material or object).[167]

The DEA is the most important role player in environmental management in South Africa.[168] It is ultimately responsible for ensuring that the Waste Act is implemented and that the various provisions are harnessed in the most appropriate and effective ways.[169] The Waste Act specifies various mandatory and discretionary provisions that the DEA must address, which include providing assistance in preparing and implementing IWMP (as is discussed in Part B of this chapter), and the Minister as the licensing authority for e-waste and other waste streams.

Accordingly, an analysis of e-waste under the Act is carried out below under three main headings: licensing; priority waste and EPR; and norms and standards. These provisions are fundamental to e-waste management in South Africa.

a. The licensing of waste management activities

The NWMS explains the purpose of licensing as one that aims to ensure that specific conditions regulate identified waste management activities that may have a detrimental effect on the environment.[170] The requirement for licensing applies to a range of listed waste management activities, including waste storage, recycling, recovery, waste

[167] The definition of recovery and re-use is amended by the Waste Amendment Act 2014.

[168] Naude, above (note 26) at 54.

[169] See NWMS 2011 at 56. E-waste falls within national purview and there is little or no legislation on e-waste at the provincial level, since they deal with general or municipal solid waste. Examples of such include the Gauteng Provincial Integrated Waste Management Policy 2006, which recognises the need for segregation and separate collection of hazardous domestic waste from the general waste stream for safe removal and disposal in accordance with a prioritisation of waste streams such as old batteries, fluorescent tubes, etc. In the Western Cape, the Integrated Pollutant and Waste Information System (IPWIS) requires recyclers and waste transporters to report on listed substances, which include heavy metals such as mercury, lead, iron or chromium (e-waste constituents. See eWASA Technical Guidelines, Version No.1.1, 10 March 2014 at A. 1.3 and A.1.4 at 16.

[170] NWMS, above (note 16) at 42.

treatment, waste disposal, the construction or decommissioning of facilities and associated structure and infrastructure.[171]

The Waste Act also requires that the notice listing the waste management activities must indicate whether a waste management licence is required for that activity or, if not, the standards or requirements that govern the activity. Where a standard or requirement has been set, listed waste management activities that are exempt from licensing requirement must comply with that standard, and they must register with and report regularly to SAWIS.[172] The National Waste Information Regulations[173] lends credence to the reporting requirements, requiring recycling companies to register and report to the Waste Information Centre or a province that has implemented a waste information system that is in line with the national system.[174]

Chapter 5 of the Act provides for a licensing regime specific to waste management activities. It replaces the permitting process that was provided for in section 20 of the ECA 1989. Transitional arrangements allow existing permits granted in terms of the ECA to be

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[171] GN 130 *GG* 38472 of 13 February 2015 amends the 2013 list to include, among others, mining or prospecting activities. See the Department of Environmental Affairs (2013) National Environmental Management: Waste Act 2008 (Act 59 of 2008) List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, GN 921 in *Government Gazette* No. 37083, 29 November 2013. Under the list, e-waste facilities would have to comply in the following categories: Category A: Recycling, re-use, recovery and treatment of hazardous waste in excess of 500 kg but less than 1 ton calculated as a monthly average; Category B: Recycling, recovery and treatment of hazardous waste in excess 1 ton calculated as a monthly average; and Category C: Storage of hazardous waste in excess of 80 m^3 at any one time. This means that e-waste companies who fall under the thresholds of these categories will not have to apply for a waste license but will have to comply with the norms and standards. For companies who exceed thresholds, Category A and B still apply.

[172] Where a person requires his or her activities to be exempted from requiring a license on the grounds of its contribution to waste minimisation or diversion of waste from landfill, applications can be made to the Minister of Environmental Affairs through the process (motivation) identified in the Waste Classification and Management Regulations in GN R634 *GG* 36784 of 23 August 2013. See also section 19 (1)-(3) of the Act. As stated above, the Waste Classification and Management Regulations also required the re-classification of all wastes that were classified in terms of the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste 1998*, as published by Department of Water Affairs and Forestry. See s. 12 (1) of the Regulations.

[173] GN R625 *GG* 35583 of 13 August 2012.

[174] The regulation defines e-waste as hazardous waste (HW18) unless it is decontaminated, with all hazardous substances removed (GW18). However, batteries are listed separately as HW03. See Annexures 3 and 4 of the Regulations; and eWASA Technical Guidelines, above (note 169) at 8.

regarded as licenses in terms of the Waste Act until the Minister requires a license application as per the Waste Act.[175] Consequently, all waste management license applications are captured in the National Environmental Authorisation System (NEAS), and will be managed by an independent environmental assessment practitioner (EAP).[176]

The requirement that any person intending to conduct any waste management activity should apply for a licence is a laudable aspect of the Waste Act, particularly in view of the nature of hazardous components that e-waste contains, and the potential for its re-use, recovery and recycling. Notably, most voluntary e-waste recycling companies in industry also ensure that they are registered or obtain the relevant licence under the Second Hand Goods Act 6 of 2009.[177] The Act regulates, among others, the business of dealers in second-hand goods. As second-hand EEE is also imported into South Africa, it falls within the scope of this legislation. It further defines a *dealer* as 'a person who carries on business of dealing in second-hand goods,' and a *recycler* as 'a person who carries on the business of recycling scrap metal.'[178] A dealer and/or a recycler is required to register under the Act before he or she can carry out the business of dealing in any second-hand goods. Although the process of registration is similar to the requirements under the Waste Act 2008, applications are made to and approved by a National Commissioner of the SAPS.[179]

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[175] Section 81 (1)-(6). See also NWMS at 43 and Baloyi, above (note 159) at 37. The Minister is the licensing authority concerning importation and exportation of hazardous waste, activities performed by a provincial environmental authority or statutory body other than a municipality, or an activity that takes place in more than one authority or that traverses international boundaries. The Minister may also delegate licensing authority for a particular waste management activity to the MEC, and the MEC can request that the Minister be a licensing authority for activities for which the MEC is the licensing authority. See s 43 (1), (3) (a) and (b).

[176] This is in accordance with sections 46, 48 and 49 of the Act. See also NWMS, above (note 16) at 43.

[177] The commencement date of this Act was 30 April 2012.

[178] Section 1 of the Second Hand Goods Act 2009.

[179] Sections 3 and 25 of the 2009 Act. The Minister of Police has published Regulations for Dealers and Recyclers, pursuant to section 41 (1) of the Second-Hand Goods Act. The Minister of Police may issue a certificate of registration or temporary registration, depending on the circumstances, to a dealer or recycler, and the business or class of goods such dealer or recycler is involved in will be specified on the certificate. See Regulation 4 (2) *(a),* Regulations for Dealers and Recyclers, GN R285 *GG* 35220 of 3 April 2012.

The requirement of licensing under the Waste Act and the Second Hand Goods Act appears to a way of controlling the import of e-waste into South Africa under the guise of used EEE, and is another way of implementing the EPR principle. In Chapter 2, the EPR principle was described by Lindhqvist as an 'environmental protection strategy which aims to reach an environmental objective i.e. decreased total environmental impact from a product, by making the manufacturer of a product responsible for entire life-cycle of a product.'[180] Accordingly, the requirement that a person intending to conduct any waste management activity must apply for a licence – be it a producer or importer fulfilling its obligations under the EPR matrix, or a private recycler –, implements the EPR principle. Where the licence is granted, it will further ensure that any recycling activities carried out by the particular entity is effectively carried out in order to reach the desired environmental objective of protecting human health and the environment.

b. Priority waste and extended producer responsibility

The Waste Act empowers the Minister to declare a waste to be a priority waste should it be a threat to health, well-being or the environment because of the quantity or composition thereof.[181] Feris and Du Toit view this provision as particularly important, since these waste management measures can be utilised to limit or prohibit the generation of the waste, may limit its importing and exporting, and may lead to the waste being phased out completely.[182] Where the Minister makes such a declaration, it must specify waste management measures to address the threat; and that such measures may improve reduction, re-use, recycling and recovery rates or reduce health and environmental impacts.[183] Such waste management measures include the preparation of an industry waste management plan; prohibition on the generation of the priority waste; measures for the

[180] Thomas Lindhqvist, 'Extended Producer Responsibility in Cleaner Production – Policy Principle to Promote Environmental Improvement of Product Systems' May 2000, Doctoral thesis at fn.1, p. ii, available at *http://www.lub.lu.se/luft/diss/tec355.pdf*, accessed on 04 November 2013

[181] Section 14 (1) (a). See also Feris and Du Toit, above (note 20) at 21-34.

[182] Ibid at 21-35.

[183] S. 14 (1) *(a) (b).*

management, minimisation, storage, re-use, recycling and recovery, treatment and disposal of same.[184]

The Minister is also required to consult with the Minister of Trade and Industry and the Minister of Finance if the declaration of such a priority waste may have a significant effect on the national economy.[185] The consequences associated with the declaration of a priority waste is the prohibition of importing, manufacture, processing, selling or exporting same, unless the waste complies with waste management measures stipulated above; an industry waste management plan has been submitted or is in compliance with any other requirement under the Act.[186] Another consequence is the prohibition of recycling, recovery, treatment or disposal of a priority waste unless in accordance with the Act and waste management measures stated above.[187] The hazardous nature of e-waste is such that it should be considered a 'priority waste,' as recommended by the DEA Status Quo Report above. However, the Minister of Environmental Affairs is yet to formally declare e-waste a priority waste in a public document, in accordance with the Waste Act 2008.[188] This requirement is particularly important for future management of e-waste in South Africa, since the Act prohibits the importation, manufacture, processing, selling, exporting, recycling, recovery, treatment or disposal of a priority waste.[189] It also appears that declaring this waste stream to be a priority waste will ensure a stricter approach to e-waste management to ensure that sustainable e-waste management is achieved.

As at the time of submitting this thesis, no priority waste had been declared by the DEA in South Africa under the Waste Act, although the Asbestos Regulations 2008[190] and

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[184] S. 14 (5) *(a) – (f)*.

[185] S. 14 (2).

[186] S 15 (1) *(a)-(c).*

[187] S. 15 (2).

[188] Section 14 of the Waste Act 2008.

[189] Section 15 (1) and (2).

[190] Regulations for the Prohibition of the Use, Manufacturing, Import and Export of Asbestos and Asbestos Containing Materials, GN R341 *GG* 30904 of 28 March 2008.

the Waste Tyre Regulations 2009[191] had declared asbestos and waste tyres to be priority wastes under the ECA.[192]

The inclusion of EPR within the Waste Act 2008 reflects the SA government's recognition of same via the EPR Status Quo report above, and the urgent need to place responsibility for waste generation and management on manufacturers of products that generate waste. The Act empowers the Minister of Environment, after consultation with the Minister of Trade and Industry, to – among others – implement and operate a mandatory EPR programme for the reduction, re-use, recycling, recovery, treatment and disposal of waste; specify the EPR measures that must be taken concerning a particular product or class of products; labelling and other financial requirements concerning waste; and the implementation of cleaner production and scientific measures by producers/manufacturers.[193] This provisions of the Waste Act 2008 find expression in e-waste management, because the utilisation and application of less hazardous components in manufactured EEE will promote more recycling and re-use of e-waste components. The emphasis on implementation of cleaner production measures is also indicative of the physical/environmental responsibility under the EPR matrix.

The NWMS reiterates that such a mandatory EPR scheme under the Act can be declared when voluntary schemes provided for by IWMPs have failed to effectively manage a waste stream.[194] It is also the prerogative of the Minister of Environmental Affairs to declare a particular waste stream or the characteristics of a particular waste product as one that is suitable for the EPR programme.[195] Thus, the NWMS identifies electronics as one such waste stream that meets the criteria for application of the EPR Programme.[196]

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[191] Waste Tyre Regulations, GN R149, *GG* 31901 of 13 February 2009.

[192] Feris and Du Toit, above (note 20) at 21-35.

[193] Section 18 of the Waste Act 2008.

[194] NWMS, op cit., at 47.

[195] NWMS, above (note 16) at 48.

[196] Ibid at 48.

The NWMS expressly provides that the state is not obliged to fund EPR initiatives, since the primary obligation for funding rests with producers, retailers and consumers along the value chain. Financial arrangements will need to be tailored to individual EPR programmes, and the key challenge will be to establish who along the value chain bears what portion of the costs. The DEA will also be required to develop guidelines on the distribution of costs for EPR programmes in consultation with industry, [197] and guidelines to assist with the development of voluntary and mandatory EPR programmes.[198] Additionally, the adoption of a Pricing Strategy by the new Waste Amendment Act 2014,[199] in line with the requirements of the NWMS 2011,[200] purports to set waste management charges for certain waste streams before the end of 2014.[201] As at the time of submitting this thesis, such waste management charges had not yet been fixed. Nevertheless, the proposed adoption of waste management charges for certain waste streams reflects EPR, which advocates the adoption of economic/financial instruments in its application. While the adoption of such financial instruments under EPR is to place responsibility on a producer or importer as the case may be, such waste management charges to be applied to recycling and proper disposal of e-waste, as reflected in mandatory legislation, is another way in which the EPR principle can be implemented.

It should be noted that the Status Quo Report above recommended the application of specific financial instruments, in order to shift responsibility for product waste such as e-waste to producers and consumers. Such instruments could be deposit refund systems, target product taxes, ADFs, or voluntary agreements (see Chapter 2). Although e-waste has not yet been declared by the South African government to be a priority waste, it is

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[197] Ibid.

[198] Ibid.

[199] Act 26 of 2014.

[200] See NWMS, above (note 16) at 48.

[201] Part 3A of the Amendment Act.

only a matter of time before this is done. Accordingly, it is suggested that any waste management charges to be fixed for e-waste in accordance with the Pricing Strategy must consider the deposit refund system or the ADF, which encourages re-use and provides an incentive for the consumer to return used EEE, and an incentive for government to set up appropriate recycling infrastructure for same. Although the said waste taxes are to be managed by the Waste Management Bureau,[202] it is suggested that the government should consider the recommendation made by the Basel Convention's Partnership for Action on Computing Equipment (PACE) Guidance Document in Chapter 3 of this thesis, which states that the management of such recycling of disposal fees/charges must be transparent to all concerned persons, including governments and the public.[203] Nevertheless, a tax for e-waste disposal, recycling and management portends a positive approach to e-waste in South Africa, since the imposition of this tax places South Africa on par with developed countries in Europe, and will ensure a high percentage of collection and recycling of e-waste thereto.

c. Norms and standards

The Act mandates the Minister to publish national norms and standards relating among others to waste classifications and the storage, treatment and disposal of waste,[204] and he or she may, at his or her discretion, also publish norms and standard relating to re-use, recycling and recovery of waste and EPR.[205]

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[202] The Bureau functions among others as a specialist implementing agent within the Department of Environmental Affairs in respect of matters delegated to the Bureau under the Act. See Part 7A of the Waste Amendment Act 2014, and s 34D (a).

[203] Para. 25 of UNEP Basel *Guidance Document on the Environmentally Sound Management of Used and End-of-Life Mobile Phones* UNEP/SBC/2012/8 (2012) Publishing Service, United Nations: Geneva, available at *http://www.basel.int/Implementation/PartnershipProgramme/MPPI/MPPIGuidanceDocument/tabid/3250/Default.aspx*, accessed on 15 July 2014.

[204] Section 7(1) *(a)-(c).*

[205] Section 7 (1) *(a)-(d).*

In accordance with this provision, the Minister has published certain norms and standards that are of direct relevance to e-waste recycling, storage, disposal and management and e-waste facilities. They include:

i) National norms and standards for the storage of waste.[206] These standards apply to any person storing either general or hazardous waste, including e-waste. No basic assessment or waste license will be required, but an e-waste facility must comply with the norms and standards, which list several specifications regarding construction and design and training of employees, among others. [207]

ii) The National Norms and Standards for the Assessment of Waste for Landfill Disposal,[208] which assess waste to identify chemical substances present therein for the purpose of disposal to landfill. The specific waste type for disposal to landfill must be determined based on the total concentration limits (TCT limits) and leachable concentrations (LCT limits) of the specific waste type.[209]

iii) The National Norms and Standards for Disposal of Waste to Landfill[210] prohibit and restrict the disposal of certain e-waste fractions to landfill with effect from the following compliance timeframes from the date of the regulations coming into effect. For instance, for lead acid batteries, the prohibition or restriction is immediate, and for other batteries, prohibition or restriction is in eight years (i.e. 2021). For PCB-containing wastes, prohibition or restriction is in five years (i.e. 2018). For hazardous WEEE (lamps),

[206] GN 926 *GG* 37088 of 29 November 2013.

[207] See EWASA technical guidelines, above (note 169) at 8.

[208] GN R635 *GG* 36784 of 23 August 2013.

[209] S. 3(1) (a), (3), (4) and 7.

[210] GN R636 *GG* 36784 of 23rd August 2013.

> prohibition is in three years (i.e. 2016), and for other WEEE fractions, prohibition or restriction is within eight years (i.e. 2021).[211]

This part of the chapter emphasises the regulatory scheme of existing legislation in South Africa on e-waste management. The norms and standards highlight mandatory regulations that seek to achieve the desired environmental objective of reducing impacts of e-waste on human health and environment. The restriction on disposal of certain e-waste fractions in landfills represents a shift in approach by SA's government towards more sustainable practices such as recovery and recycling, which is typical of the EPR principle. While the implementation and enforcement of these laws fall within the purview of national and provincial DEA and DTI, the constant reference to re-use, recycling, recovery and proper disposal throughout the waste legislation above are proof of the imbibed element of sustainability, which is emphasised in this thesis. As stated in Chapter 2, while EPR envisages that responsibility for the entire life-cycle of an EEE be placed on the producer, the ambit of the NWMS which states that the 'primary obligation for funding rests with producers, retailers and consumers along the value chain[212] envisages shared responsibility which is embodied in product stewardship. The combined implementation of the EPR and PS in SA is examined in Part B. The NWMS clearly acknowledges the ever-increasing quantities of e-waste and the need to develop strategies for remedial solutions by 2013/2014.[213]

As noted, there is as yet no mandatory EPR programme established for the management of e-waste or any other waste stream under the Waste Act. Nonetheless, there exists a single regulated EPR scheme in South Africa, which is achieved by the activities of the REDISA. As identified in Chapter 2, the application of the EPR principle can be achieved through mandatory and voluntary take-back approaches. REDISA typifies a mandatory approach developed by government, backed by mandatory regulation. This

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[211] Ibid, Regulation 5.

[212] NWMS, above (note 16) at 48.

[213] DEA/ATE E-Waste Document, above (note 4) at p. 110; NWMS, above (note 16) at 69.

mandatory approach of the REDISA model on waste tyres is imperative here because it was promulgated under the Environment Conservation Act above, and is a successful model that is worthy of emulation, in the event that an EPR scheme is established for e-waste management under the Act.

4.5.9 REDISA model on waste tyres: A mandatory approach

The efforts of REDISA typifies a voluntary-mandatory approach (hereafter, VM approach). Waste tyres are one of the most problematic waste streams in South Africa[214], with an annual production of over 200,000 tonnes. The non-compactable nature of these tyres render them undesirable for disposal in landfill sites. As a result, they are either subjected to uncontrolled burning to recover the small amount of metal that can be retrieved from them, or piled up in illegal storage sites – several very large tracts of land all over the country.[215] To address this situation, the DEA promulgated the Waste Tyre Regulations,[216] which give effect to PR, whereby producers are provided an opportunity to determine the manner in which they would manage and finance the management of tyres once they become waste.[217] The Waste Act 2008 anticipates the need to address national issues of waste with holistic national plans,[218] and the REDISA Plan was developed in recognition of this.[219]

The REDISA Plan seeks to manage the recycling of waste tyres in South Africa, implementing social and economic incentives and ensuring that tyre producers bear

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[214] This means new, used, retreaded, or unroadworthy tyres, not suitable to be retreated, repaired or sold as a part worn tyre and not fit for its original intended use. See Regulation 1 of the Waste Tyre Regulations 2009.

[215] The burning of these tyres results in health hazard to people, especially the elderly and children, causes environmental degradation, and the illegal storage sites are fire hazards, which also provide a breeding ground for mosquitoes. See REDISA 'Work Opportunities with REDISA – Waste into Worth' REDISA Monograph Publication. See also Department of Environmental Affairs 'Department of Environmental Affairs announces the Resumption of REDISA Plan Implementation' 20 December 2012.

[216] Waste Tyre Regulations 2009, above (note 191).

[217] REDISA Monograph, above (note 215)

[218] Section 28 (1) of the Waste Act 2008.

[219] REDISA is a non-profit company was formed in 2010. See the REDISA Monograph, above (note 215).

responsibility for tyres manufactured. The current REDISA Plan was adopted only after extensive litigious processes between REDISA, the South African Tyre Recycling Process Company (SATRP)[220] and the Retail Motor Industry (RMI).[221] The recycling of waste tyres is implementable by virtue of the approved Integrated Industry Waste Tyre Management Plan in 2012 by REDISA.[222] The Plan was also motivated by the provisions of the Waste Act 2008, which requires an IWMP for a situation where waste affects more than one province or where such activity is conducted in more than one province.[223] The Plan is structured around there being only one waste tyre management plan, on the basis that this is the only workable approach.[224] The Waste Tyre Regulations prohibit the recycling, recovery or disposal of a waste tyre, except as authorised by law, and sets out duties of tyre producers, dealers and stockpile owners.[225] It further sets out the requirements that must be contained in a waste management plan and criteria in which must be met for storage of waste tyres.[226]

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[220] The SATRP is a non-profit company and leader in waste tyre management in South Africa. It was involved in the shaping of the Waste Act 2008 and Waste Tyre Regulations 2009. SATRP sought to encourage their subscribers not to register and comply with the REDISA Integrated Industry Waste Management Plan (IIWTMP), which had been approved by the DEA. The North Gauteng High Court dismissed the application with costs. See 'REDISA Wins SATRP Legal Action' available at *http://www.wiredcommunications.co.za/redisa-wins-satrp-legal-action/*, accessed on 08 June 2015. See also DEA Press Release 'Department of Environmental Affairs announces the Resumption of REDISA Plan Implementation' 20 December 2012 at 1, available at *www.redisa.org.za/Satellite/PRESS-RELEASE-DEA-20-Dec-2012.pdf*, accessed on 08 June 2015. See also SATRP Company website – *http://www.satrp.co.za/,* accessed on 8 June 2015.

[221] The RMI, a voluntary organisation founded for the purpose of promoting, protecting and encouraging the interests of its members and the general motoring public, also sought an interdict to halt the implementation of REDISA IIWTMP. The implementation of the approved REDISA plan was halted momentarily by the court, and REDISA was restrained from proceeding with the implementation of the Plan until the matter was reviewed. See *Retail Motor Organisation & Anor v Minister of Water and Environmental Affairs & REDISA* CASE No: 51148/2012, North Gauteng High Court Pretoria, 20 November 2012 at 3. See also DEA Press Release, above (note 212) at 2.

[222] National Environmental Management: Waste Act (59/2008): Approval of an Integrated Industry Waste Tyre Management Plan of the Recycling and Economic Development Initiative of South Africa, GN 988 *GG* 35927 of 30 November 2012.

[223] Section 28 (1) of the Waste Act; Section 2.1 of the IIWMP, ibid.

[224] Section 2.1, at 5 of the IIWMP.

[225] Section 9.

[226] S. 16 of the Waste Tyre Regulations.

In a bid to ascertain what classification of producer responsibility[227] is envisaged under the REDISA model and its success, the researcher conducted semi-structured interviews with senior personnel of REDISA (Respondent 1). Respondent 1 is of the view that EPR should be amended to mean extended ***product*** liability. The reason for this, he says, is that:

> the producer is liable for the consequences of what they make, and what they put into the market, but it would be a mistake to lay the lion's share of the responsibility for implementing recycling solutions for waste tyres on these producers.[228]

He argues that 'producers are not necessarily best qualified to recycle their products; the skills, logistics and systems needed to collect and recycle or reclaim are different from those required to manufacture and distribute.'[229] While Respondent 1's argument is valid, it may be argued that producers are in a better position to recycle their products because they are aware of the components and substances utilised in their manufacture and distribution, and are thus better able to influence the establishment of collection and recycling systems and facilities in any jurisdiction.

To ensure that producer 'liability' is properly implemented in waste tyre management, REDISA requires all tyre producers[230] to subscribe to the IIWTMP in accordance with the Waste Tyre Regulations 2009.[231] Producers, who may also be importers as defined under the Regulations, are subject to compulsory registration with REDISA. They are also required to provide a monthly declaration of their tyre production (including rejects), imports and exports, and to provide annual audit certificates

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[227] See the EPR matrix in Chapter 2.

[228] See record of interview with REDISA personnel, Cape Town, South Africa.

[229] REDISA 'Adventures in Waste and Recycling Policies – Creating Value' at 1.

[230] A tyre producer refers to any person or institution engaged in the commercial manufacture or import of tyres and retreadable casings, and the import of vehicles fitted with tyres for distribution in South Africa. See Regulation 1 of the Waste Tyre Regulations 2009 and REDISA IIWTMP 2012, above (note 222) at 10.

[231] Failure of a producer to subscribe to an approved IIWTMP while continuing to produce tyres constitutes an offence under Part 7 of the Waste Tyre Regulations. See also Part 3 of the 2009 Regulations and section 4 of the REDISA IIWTMP, above (note 222) at 10.

confirming their declaration of amounts of tyres imported and/or manufactured.[232] Producers must also pay a waste management fee of R2,30 + Value Added Tax (VAT) on every kilogram of new tyre rubber produced, in proportion to the quantity and nature of the materials used in their products and packaging. This fee would be based on the average cost of collecting and recycling the ultimate waste resulting from their products.[233] The fee being charged achieves two purposes: it provides financial incentives to producers both to minimise the quantity of waste and to design their products for ease of recycling.[234] The funds collected are then applied to developing and supporting waste tyre collectors and transporters, storage depots, recyclers,[235] and secondary industries that make products from recycler output.[236] These waste tyre transporters (who transport tyres between dealers, tyre depots[237] and recyclers) processors and recyclers are required to meet REDISA's criteria before they can be approved, registered and accredited as such. Additionally, REDISA provides financial and administrative support to these persons to enable them to establish their businesses, and ensures that they comply with the applicable industry standards such as the possession of a waste management license, compliance with other environmental laws, and general duty of care as imposed by the Waste Act.[238]

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[232] Section 4 of IIWTMP.

[233] Ibid at 2.

[234] Ibid.

[235] A tyre dealer refers to a person or entity that distributes or deals commercially in tyres. It is distinguished from a waste processor (any person or entity that is engaged in the commercial re-use, recycling or recovery of waste tyres); a waste recycler (a person who separates and processes waste tyres for further use as new products and resources); and a waste collector/transporter (any person who collects and delivers waste tyres). See IIWTMP, above (note 222).

[236] 'REDISA's Waste Tyre Plan' *http://www.redisa.org.za/about/waste-tyre-plan/,* accessed on 28 October 2014.

[237] A person can become a tyre deport owner if he or she meets REDISA's criteria for same. Once a REDISA depot is established in an area, such a person can be appointed to manage it and will liaise with registered REDISA waste transporters, who deliver the waste tyres, the waste depot owner weighs the waste and confirms to REDISA the delivery of the waste tyres, the tyres are pre-processed by the depot and REDISA will advise when transporters will collect such pre-processed tyres for delivery to recyclers. See REDISA's website.

[238] Section 12 of IIWTMP, above (note 222).

The fee being charged to producers manifests the economic/financial obligation of a producer under the EPR matrix. This type of economic responsibility under the REDISA plan is placed solely on the producer of new tyres, so that the funds collected can be applied to the collection and recycling of waste tyres. The sustainable nature of the EPR principle being applied by REDISA through its IIWTMP is such that more than 17,009 tonnes of waste tyres were collected and ultimately diverted from landfills between 1 December 2013 and 30 June 2014.[239] In addition, REDISA's financial assistance to waste transporters, processors, dealers, deport owners and recyclers has resulted in the creation of more than 1, 500 jobs in South Africa.[240] Economically, transporters are paid for collecting and delivering waste tyres to depot owners and recyclers, and the imposition of the waste management fee on tyre producers provide the requisite funding to set up a national collection system, the depots and the recycling operations.

Therefore, REDISA acts as a PRO and a licensing body for the DEA through its IIWTMP, which is a single plan. Respondent 1 emphasises the importance of a single industry waste management plan for a specific waste stream. He notes the impracticability of having multiple plans for waste tyres, since multiple plans would mean that every participant in the tyre industry would have to comply with multiple sets of rules and be subject to multiple audits. Hence, the REDISA plan, which applies a waste tyre management fee at source on the tyre producers is 'superior,' simple and devoid and devoid of administrative burdens.[241]

Concerning REDISA's accountability in view of its role as a financial manager of waste tyre recycling for the government, Respondent 1 states that:

> REDISA has imposed 'very strict governance principles and supervision' on itself, requiring the government to 'introduce legislation to control our activities.[242]

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[239] This total collection rate reflects the tonnes of tyres collected from the regions of Gauteng, North West, Free State, Northern Cape, Eastern Cape, Western Cape, KwaZulu-Natal in South Africa. See 'REDISA Achievement,' available at *http://www.redisa.org.za/redisa-achievements/,* accessed on 24 October 2014.

[240] See interview with REDISA personnel, above (note 228).

[241] IIWTMP, above (note 222) at 8.

[242] See record of interview with REDISA personnel; above (note 228).

REDISA's reason for advocating this is to avoid any threats or accusations of mismanagement of the waste management fee imposed on the producers, which amounts to about R600m a year.[243] Accordingly, Respondent 1 notes that REDISA has employed top auditing firms to examine different governing, compliance and internal auditing aspects of their operations to ensure that they are above suspicion. REDISA also provides a monthly report to the DEA of its finances and activities. However, he opines that the requirement that auditing firms be required to audit financial management organisations such as REDISA should be mandated in law to protect waste stream management in South Africa. [244] In response to my question regarding to necessity of partnerships between government and waste industry in South Africa, Respondent 1 reiterated the importance of such synergy; he believes that it is one of the ways in which the EPR principle can be successfully and effectively applied, stating:

> the whole idea of an industry waste management plan is based on the concept of co-regulation, where government invites industry to come on board and recommend mechanisms of regulating itself. These types of partnerships between government and industry are essential and will most likely contribute towards a developed South Africa.[245]

This assertion by Respondent 1 is accurate, and echoes the researcher's selection of South Africa as a case study for Nigeria. The idea of co-regulation via partnership between government and industry is essential in implementing EPR, not just in the e-waste industry in particular, but in the wider waste industry in general.

REDISA's future goals include a reduction in the tyre fee by ensuring that producers attach an environmental rating (to be developed by REDISA) to their tyres. This rating will provide information on the materials utilised in the manufacture of the tyre,

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[243] Ibid.

[244] REDISA interview, above (note 228) at 8.

[245] Department of Environmental Affairs 'DEA announces resumption of REDISA Plan,' 20 March 2012, at 2, available at *https://www.environment.gov.za/content/resumption_redisa_plan*, accessed on 20 August 2014.

and where such tyres sit on a high spectrum of the proposed environmental rating, such a producer will be required to pay less than other producers who are placed low on the environmental rating.[246] The purpose of this is to 'influence producer behaviour' and ensure 'cleaner production methods' are used that are environmentally and economically beneficial to South Africa's climate, and thus promote the sustainable waste tyre management in South Africa.

The EPR matrix applicable to producers/importers appears to be wholly reflected under the REDISA model. Producers or importers of new tyres into South Africa are liable for any externalities or harm caused by the consumer in the usage of the product. Financial responsibility is borne by producers of importers of the plan through an ARF on every new tyre produced, which is applied towards collection and recycling of waste tyres in South Africa. In view of the fact that recyclability of new tyres reflect sustainable environmental management, the physical responsibility of utilising cleaner production methods and less harmful/toxic substances in tyre production rests on the producer/importer. Also, it is assumed that the producer/importer of new tyres discharges its informative responsibility concerning new tyres produced by ensuring that requisite information accompanies the purchase of such products. The environmental rating proposed to be included by REDISA is also indicative of the informative responsibility set out in the EPR matrix.

Consequently, while the implementation of the REDISA model in South Africa is noteworthy and reflective of the EPR principle, the model has been criticised, particular concerning transparency and accountability of finances collected by REDISA in waste tyre management.[247] As noted, the Basel MPPI Guidance Document emphasises the need for transparency of any EPR financial mechanism employed in the management of any waste stream. Stakeholders in industry disapprove of the fact that REDISA model is one of the few EPR schemes in the world where 30% of the levy collected is used to fund the administration (i.e. REDISA as an organisation), when an average EPR scheme should

[246] Excerpt of REDISA interview, above (note 228) at 11.

[247] See generally Jan Jooste *Evaluation of the REDISA Plan as approved in Government Notice 564 of July 2012*, *26 August 2012,* available at *htttp://www.tdafa.co.za/images/pdf/3.pdf*, accessed on 09 March 2015.

use no more than 16% for the administration of a waste levy. Additionally, in line with Respondent 1's assertion that it may be unrealistic to impose the 'lion's share of responsibility of recycling solutions for waste tyres on producers,' it appears that the notion of shared responsibility envisaged in this thesis (EPR and PS) be considered in waste tyre management. Consumers can be made to share in the recycling levy currently being imposed on producers.

Another area on which REDISA is criticised is the fact that the Plan does not deal with historically stockpiled tyres across the country and/or big tyres generated in the mining industry. These are still being dumped in open fields, sometimes constituting breeding grounds for insects. It also appears that the DEA may share in the blame, since it can be accused of creating a monopoly in the market. Currently, any waste tyre circulated presently in South Africa technically belongs to REDISA, and the Waste Tyre Regulation expressly prohibits any person from recycling, recovering or disposing of any waste tyre in South Africa except in compliance with the Regulations. Respondent 1 emphasised the working relationship which REDISA has with audit companies in order that they may furnish records of financial accountability to any dissatisfied member of the public.[248] While this is commendable, it appears that REDISA should become more transparent, especially in view of the litigious processes it encountered before the approval of the Plan. The SATRP resubmitted an IIWMP to the DEA in July 2012,[249] and it remains to be seen whether the SATRP Plan will apply the EPR principle to waste tyres in South Africa in the manner in which the REDISA Plan has done.

Part A constituted an extensive exploration into mandatory regulations applicable to e-waste in South Africa. It revealed South Africa's incorporation of the EPR principle and the mechanisms in place to facilitate its implementation. In view of a lack of an EPR scheme on e-waste in South Africa, the next part of this Chapter will now examine the

[248] Record of Interview with REDISA personnel, above (note 228).

[249] A first draft of IIWTMP was submitted in 2009, a second draft in May 2010, a third draft on 4 April 2011 and a fourth draft in July 2012. The DEA provided input and detailed comments on the SATRP on 13 February 2013. See DEA 'Industry Waste Management Plans – PCWEA' 26 February 2013, p 13.

extent to which the EPR principle has been embraced and applied through voluntary initiatives.

PART B VOLUNTARY EPR INITIATIVES IN SOUTH AFRICA

Voluntary approaches to environmental protection are sometimes called the 'next generation of environmental policies.'[250] They are typically undertaken by industry, and are usually aimed at post-consumer waste streams.[251] In contrast to mandatory policies such as direct regulations and environmental taxes, these approaches rely on voluntary actions of companies to improve their environmental performances beyond legal requirements.[252] In South Africa, voluntary actions by e-waste recycling companies and e-waste organisations seek to improve environmental performance concerning e-waste management through EPR, apart from the mandatory approach. In Chapter 2, three voluntary approach types that are dominant in South Africa were identified: the voluntary-to-mandatory approach, the formal-voluntary approach and the informal-voluntary approach. Part B explores the latter two types of approaches in South Africa and how the EPR principle has been applied to e-waste management through these approaches.

4.6 The ROSE model: A formal-voluntary approach

As stated in Chapter 2, the voluntary formal approach to waste management is one that was developed by industry. It does not form part of mandatory regulation, but has a

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[250] D C Esty & M R Chertow 'Thinking ecologically: An introduction' in M R Chertow & D C Esty (eds), *Thinking ecologically: The next generation of environmental policy* (1997) in Toshior Uchida and Paul J Ferraro 'Voluntary development of environmental management systems: motivations and regulatory implications' (2007) *J Regul Econ* at 1.

[251] Department of Environmental Affairs – National Waste Management Strategy '3.10 Extended Producer Responsibility,' available at *http://wastepolicy.environment.gov.za/home/nwms_v1/3/10,* accessed on 8 June 2015.

[252] Uchida and Ferraro, above (note 250) at 1-2. Such voluntary approaches can be divided into four categories: a) public voluntary schemes involving commitments devised by a public body (a government agency or an NGO) and in which individual firms are invited to participate; b) negotiated agreements involving commitments of environmental protection developed via bargaining between a public authority and industry; c) unilateral commitments set by the industry acting independently without any involvement of a pubic authority; and d) private agreements via direct bargaining between stakeholders. See Neil Gunningham and Darren Sinclair 'Voluntary Approaches to Environmental Protection: Lessons from the Mining and Forestry Sectors' Paper presented for the OECD Global Forum on International Investment, Conference on Foreign Direct Investment and the Environment – Lessons to be Learned from the Mining Sector, 7-8 February 2002 at 3, available at *http://www.oecd.org/env/1819792.pdf,* accessed on 8 June 2015.

formalised structure. The Recycling Oil Saves the Environment (ROSE) model is utilised in this thesis for two reasons: a) to emphasise the success of such a formal-voluntary approach to waste management in South Africa, and b) because the ROSE model appears to be the longest-standing, most successful voluntary approach in South Africa. Longevity is recognised here to further buttress the usefulness of voluntary schemes in achieving sustainable waste management practices and how these achievements are impacted over time.

The ROSE Foundation, a non-profit organisation,[253] is the only organisation in South Africa to have successfully established a voluntary EPR programme. ROSE seeks to prevent the 'irresponsible dumping and burning of used lubricating oil.'[254] Its primary and stated objectives are the 'collect[ion] of as much used lubricating oil as possible, add as much value to this oil within the strictest environmental standards… encourage cleaner production before waste reduction and waste minimisation…'[255] and to promote the recycling of used oil. One of its core strategic objectives include 'supporting government in implementing enabling legislation to manage used oil and related waste in an environmentally responsible manner.'[256] Although it is a different waste stream and not specifically e-waste, it emphasises the underlying thread running through each chapter of this thesis, which is that EPR is an integral tool for effective waste management, particularly in a developing country.

ROSE embodies the requirements of the EPR principle – a 'pollution prevention policy that focuses on whole product systems rather than individual production

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[253] R Lochan 'Used Oil Management – EPR in a Regulatory Environment' Proceedings of the 20th WasteCon Conference, 6-10 October 2014, Cape Town at 1, available at *http://www.infrastructurene.ws/wp-content/uploads/sites/4/2015/06/Lochan-R.-39.pdf,* accessed on 09 June 2015.

[254] ROSE Foundation House 'History,' available at *http://www.rosefoundation.org.za/main.php?id=100*, accessed on 27 October 2014.

[255] Ibid.

[256] 'Strategic Objectives,' available at *http://www.rosefoundation.org.za/main.php?id=97*, accessed on 27 October 2014. Approximately 300m litres of lubricating oil is sold annually in South Africa for use in vehicles, mining, construction, etc. The main source of used oil comes from vehicles, of which South Africa has over 10m. See ROSE Video, Ukhamba productions.

facilities…a responsibility for the product [which] is therefore, broadened… to include the management of the product once it is discarded.'[257] Used oil is classified as a hazardous waste under the Waste Act 2008 owing to its chemical composition, and therefore must be disposed of in an environmentally responsible manner. Thus, ROSE members have voluntarily engaged in ensuring EPR for its products sold to market.[258] Although Haskell notes that EPR is based on the premise that 'the primary responsibility for waste generated during the production process… and after the product is discarded, is that of the producer of the product,'[259] *stricto sensu,* this is not the situation being applied by ROSE in South Africa. During the researcher's interview with senior personnel of the ROSE Foundation (Respondent 2), the respondent notes:

> It is only in South Africa that oil companies who manufacture lubricating oils are directly involved. This is not the case in other developed countries globally. None of the oil companies are involved.[260]

This emphasises the fact that producers of lubricating oil recognise and embrace the EPR principle and are ready to bear the requisite legal, physical, financial or informative responsibilities associated with the entire life-cycle of a lubricating oil produced or associated product that has been produced (as set out in Chapter 2). Respondent 2 emphasises that such oil companies merely make 'hazardous products (lubricating oils), not hazardous waste,'[261] and are not *holders* or *generators* of this waste stream, in accordance with the definition under the Waste Act 2008.[262] The utilisation of these products by consumers result in the generation of these used oils (waste), thus making them *holders* and *primarily responsible* for the disposal of this product. This is in stark

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[257] See Haskell's definition, above (note 80).

[258] ROSE REPORT, Winter 2014 Edition at 1. The members of the ROSE model include oil companies, manufacturing companies, collectors, distributors, etc.

[259] Haskell, above (note 82), SQ Report, above (note 79) at 2.

[260] See record of interview with ROSE personnel.

[261] Ibid.

[262] See the definition of 'holder of waste' in section 1 of the Waste Act 2008 above.

contrast to what occurs in developed countries such as the UK, the U.S. and Canada, where the oil companies who manufacture lubricating oils are not part of the Oil Recycling Association (ORA). This is because the used oil recycling industry in these countries is currently legislated by government, while in South Africa, the ROSE model is self-regulatory, promoting free enterprise and incentivising used oil collection rather than subsiding operations.[263] Perhaps the self-regulatory nature of the ROSE model underscores the reason why producers are willing to accept the necessary responsibilities towards the successful recycling of waste oils in South Africa. Producers appear to be unwilling to be subject to regulations, and the requisite subsidy of its operations, and are more agreeable to voluntary schemes, which grant them the leeway to implement cleaner production methods and recycling measures in a timeous manner.

To fulfil its mission of promoting and encouraging environmentally responsible management of used lubricating oils and related waste in South Africa, ROSE has been instrumental in the development of two initiatives. First, it created a stable and sustainable partnership with all stakeholders through the facilitation of the National Oil Recycling Association of South Africa (NORA-SA), which represents a majority of the collectors and recyclers of used oil in South Africa.[264] Its mission is 'to promote the role of the South African Used Oil industry in the collection, storage, refining, recycling and utilisation of used lubricating oil in a sustainable, ethical, environmentally compliant and responsible manner.'[265] NORA-SA is guided by the Waste Classification and Management Regulations under the Waste Act 2008, which defines the roles of a waste generator,[266]

[263] ROSE REPORT, above (note 258) at 1.

[264] The respondent notes that all collectors and recyclers must be registered with ROSE. See also ROSE REPORT, above (note 258).

[265] Ibid at 2.

[266] This means 'any person whose actions, production processes or activities, including waste management activities, results in the generation of waste.' Section 1 of the 2013 Regulations, ibid.

waste manager,[267] waste transporter,[268]and the purpose of a 'waste manifest'.[269] The waste generators, transporters and managers of used oil (for recycling, re-use or disposal) are required to provide information on the waste manifest. Once the waste manager receives the waste, he or she must ensure that the waste generator gets a signed copy of the waste manifest with three signatures: that of the generator, that of transporter and that of the manager.[270] Additionally, ROSE incentivises the collection and recycling of used oils by collectors and processors.[271] Collectors are paid 10 cents per litre to ensure safe disposal through ISO 14001 certified NORA-SA members.[272] Regular environmental audits are also conducted on processors to ensure environmental compliance and continuous improvement.[273] NORA-SA also assists its collectors with training, safety, compliance audits and collection management.[274]

In addition to the Waste Classification Regulations, it must be noted that the provisions of the National Norms and Standards for the Disposal of Waste to Landfill discussed above is pertinent to used oil. It prescribes requirements for the disposal of waste to landfill and sets waste disposal restrictions for re-usable, recoverable or recyclable used

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[267] This refers to 'any person who re-uses, recycles, recovers, treats or disposes of waste.'

[268] This means 'any person who conveys or transfers waste – (a) between the waste generator and a waste management facility; or (b) between waste management facilities.'

[269] This refers to a 'system of control documentation, which accompanies a load of hazardous waste transported from the point of generation to the waste management facility.' This manifest is important to track the used oil management cycle from generator, transport and final management. The manifest also contains information like the name, address and contact details of the waste management facility, its license number, date of receipt, quantity of waste, type of waste management, certification and declaration of receipt and final management of the waste, etc. See ROSE NORA-SA NEWS, Issue 2: 2012 at 2.

[270] Such waste manifest is valid for five years. See ROSE NORA-SA NEWS, Issue 1, 2014 at 2.

[271] Examples of NORA-SA Processors include FFS Refiners (Pty) Ltd, Cape Town and Gecco Fuels in Cape Town.

[272] All members of NORA-SA are issued with a certificate of membership valid until 30 September of each year. See NORA-SA NEWS, above (note 269) at 5.

[273] ROSE REPORT, above (note 258) at 2.

[274] Ibid at 1.

oil and oil filters. It prohibits the disposal of such waste in a landfill from four years after the coming into effect of the Regulations.[275] Respondent 2 notes that:

> these restriction and compliance timeframes do not change best practice for ROSE members and NORA-SA collectors who have long operated under the knowledge that the disposal of used oil is unacceptable. All used oil must be responsibly collected for transportation to a registered waste management facility for recycling.[276]

Second, in a bid to extend its influence over oil-related waste in ensuring EPR, ROSE engaged with the drum reconditioning industry and facilitated the formation of the South African Industrial Container Reconditioners Association (SAICRA) in January 2012.[277] SAICRA has also signed a memorandum of understanding with chemical companies and paint manufacturing plants in South Africa, since most of SAICRA members sell their products in drums that, when empty, are reconditioned by these very drum reconditioning plants.[278] These plants provide an essential service and are a source of employment to many in South Africa. ROSE also assists SAICRA with administration, legislative updates and conducts environmental audits to ensure that compliance standards are being met. All SAICRA members have applied for waste management licenses for their operating facilities.[279]

These two incentives promoted and applied by ROSE are part of EPR measures that are integral to used oil management. Its embodiment of the EPR principle ensures pollution prevention via used oil recycling, which is what the EPR principle envisages. It also promotes sustainable social development by the creation of jobs through SAICRA, a learner/training programme for youngsters, particularly those who want to pursue a career in environmental management, and by educating the public and creating awareness of used

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[275] Regulation 5 (1) (j), ibid.

[276] See ROSE Interview, above (note 260); see also ROSE REPORT, Summer 2013 at 3.

[277] SAICRA is self-funded via a contribution on each new drum manufactured or reconditioned. ROSE REPORT 2014, above (note 258) at 2.

[278] ROSE Interview, above (note 260); ROSE Video, above (note 256).

[279] ROSE Interview, above (note 260).

oil recycling with advertising in magazines and radio. Economically, the self-funding nature of the model, which extends to NORA-SA and SAICRA, discharges government from any sort of financial responsibility.

Perhaps, the two most laudable aspects of the ROSE model are: first, its success in creating solid and sustainable partnerships with all stakeholders in the industry and, second, its ability to keep abreast and ahead of waste legislation in South Africa to the extent that it is already operating in a manner that presages responsible recycling in line with Disposal of Waste to Landfill Regulations.[280] This feat is praiseworthy because ROSE is a voluntary organisation, whose *modus operandi* is not subject to governmental approval, and which clearly takes 'responsibility for its waste stream.'[281] It is therefore unsurprising that ROSE is a praiseworthy model, without legislation, in a developing country, promoting environmental compliance of a hazardous waste stream.[282]

Respondent 2 acknowledges that 'oil is a commodity which will always be sought after because there is a market for it,'[283] and spoke about the evolution of ROSE from engaging with just 'one collector [pre-1994] to incentivising and influencing a host of small businesses in the used oil industry' in South Africa. He notes that the ROSE model's dynamic is such that it is reviewed every two years and revised to satisfy market conditions in the used oil industry.[284] In response to questions regarding ROSE's future endeavours in the next five years, he notes that 'a future driver would be to get all member customers who are generators of used oil to ensure safety and legally compliant disposal.'[285] Thus,

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[280] Ibid.

[281] ROSE Video, above (note 256).

[282] ROSE REPORT 2014, above (note 256) at 1. The ROSE model has been used as a prototype for lubricant industries in the rest of the world. For instance, New Zealand, Columbia, Kenya and by the Basel Convention. They all regard the model as an exemplary one for the management of used oil. See ROSE Foundation website – *http://www.rosefoundation.org.za/main.php?id=99*, accessed on 19 September 2014.

[283] See ROSE Interview, above (note 260).

[284] ROSE Video, above (note 256).

[285] ROSE interview, above (note 260); ROSE Video, above (note 256).

ROSE pledges to continue to be proactive in meeting the challenges of used oil management and finding sustainable environmental solutions.

The ROSE model is successful because it wholly encompasses salient features of the EPR principle – a clear recognition and delineation of the responsibility of all stakeholders, including producers and consumers; adopts a voluntary yet formalised approach; promotes the social, environmental and economic intertwinings of sustainable development and the global nature of the model, the features of which can be channelled for application in a waste stream such as e-waste. Additionally, the model also epitomises the notion of 'long-term sustainability' i.e. that voluntary approaches which implement the EPR principle achieve qualified effectiveness over the course of time.

In light of this model, it is useful to explore the efforts of some voluntary initiatives in the area of e-waste in South Africa. This voluntary model in e-waste is characterised thus:

a. It consists of three e-waste industry associations with e-waste handlers (including re-furbishers, dismantlers and recyclers) as their members;

b. Unlike the ROSE Foundation model, these associations have no formal EPR programme in place. However, EPR is promoted through these associations and their members, i.e. e-waste recycling companies;

c. While the e-waste associations are not formalised, they have the effect of a voluntary scheme. This is discussed later in this chapter.

4.7 Associations in the e-waste industry: An informal-voluntary approach

E-waste industry associations can be described as producer responsibility organisations that represent the interests of stakeholders in the industry, including EEE producers, to ensure accountability for legal, financial, physical and informative responsibility (EPR matrix). The researcher interviewed personnel of the two main e-waste organisations in South Africa – e-Waste Association of South Africa (e-WASA) and the Southern African E-Waste Alliance (SAEWA) to underline the representative efforts of these two organisations, which seek to chart a specific course for e-waste in South Africa, and how their direct roles in practical management benefit the industry. The researcher also sought

to determine the extent of application of EPR in the industry, particularly the responsibility of EEE producers, and the industry approach to the existence of a PRO in South Africa.

4.7.1 e-Waste Association of South Africa (eWASA)

eWASA was established in 2008 as a non-profit organisation to manage the establishment of a sustainable environmentally sound e-waste management system for the country.[286] It is an industry-led body, its main purpose being 'to represent and promote the interests of its members,'[287] who are manufacturers, vendors and distributors of EEE and e-waste handlers (including re-furbishers, dismantlers and recyclers) to effectively manage e-waste in SA.[288] eWASA has published a Code of Ethics which is binding on all members of the association,[289] and serves to guide the operations of its members. It has also published Technical Guidelines on the recycling of electrical and electronic equipment[290] which considers and adopts a majority of the provisions in the Basel Draft Technical Guidelines on Transboundary Movement of e-waste 2013 (discussed in Chapter 3). Applying EPR, it implemented a take-back system that utilises a network of registered members who collect, refurbish, dismantle, recycle and send e-waste on for final disposal options.[291] One such take-back project was launched in October 2006 in Gauteng.[292]

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[286] See eWASA website *http://www.ewasa.org/index.html,* accessed on 30 October 2014.

[287] eWASA Articles of Association 2011, 2.1, at 2.

[288] Ibid. See also Lawhon, above (note 7) at 10.

[289] See eWASA Code of Ethics.

[290] When an application for eWASA membership is made, these guidelines form an integral part of the recycling contract entered into between eWASA and a recycling company to ensure environmentally friendly treatment of waste electrical and electronic appliances. The guidelines also stipulate the processing requirements and special obligations of the recycling companies, observance of which is assessed by eWASA Technical Control Committee (TCC) via a bi-annual auditing process. See eWASA Technical Guidelines, above (note 169) at 4.

[291] This was achieved through partnership and support from the Global Knowledge Partnerships in e-Waste Recycling program, initiated by the Swiss State Secretariat for Economic Affairs (SECO) and implemented by the Federal Laboratories for Materials Testing and Research (EMPA). The goal behind this partnership with the Swiss EMPA was to replicate the successful e-waste Swiss system in South Africa, and in such a way that it could be applied in the African continent. See Record of Interview with eWASA personnel. See also eWASA website, above (note 286).

[292] In Gauteng, more than 25 garden sites have been established where e-waste can be disposed of. However, Pikitup, an integrated waste management company in South Africa, in conjunction with two other e-waste

In view of this, the researcher's interviews sought to determine the extent and effectiveness of eWASA's representative capacity of SA's e-waste industry. As of early 2011, eWASA had successfully positioned itself with the national government as the key representative body.[293] Its most pressing goal since has been to establish a green ARF in line with the requirements of the EPR principle, which can be levied on EEE producers. Respondent 3 (an e-WASA staff member) notes that producers in this context refer to importers of EEE into South Africa. Respondent 3 explains that there are main EEE manufacturers that import EEE into the country and that there are also distributors. These distributors are seen as importers, because they also import electrical and electronic components and build it in South Africa.[294] However, South Africa has no local manufacturer of EEE; hence it is at the point of importation that eWASA intends to levy ARF on such persons, after it has reported to the PRO how much was imported. Accordingly, such a fee is paid by these importers.[295] This proposition echoes the hypothesis set out in Chapter 2 – that an import levy be imposed on an importer of new and used EEE in a developing country context. This proposed fee will be managed collectively by eWASA, which is basically regarded as the PRO, and will ensure that is properly applied to the development of industry, particularly in the provision of requisite battery and refrigerator recycling facilities, which do not currently exist in South Africa.[296]

This proposed fee was an important part of the draft eWASA Industry Waste Management Plan (IWMP) 2011,[297] drafted in accordance with Section 28 of the Waste

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recycling companies, ensures that the e-waste at such garden sites are collected and properly dismantled at their recycling facilities. See 'News E-Waste Launched,' available at *http://www.pikitup.co.za/jit_default_837.html,* accessed on 20 October 2014.

[293] Per Mary Lawhon's personal communication with Keith Anderson, eWASA's Chairman in 2011. See Lawhon, above (note 7) at 78.

[294] See eWASA Interview, above (note 291).

[295] Ibid.

[296] These importers are also required to register with eWASA if they import any EEE into the country. See eWASA interview, above (note 286).

[297] Draft v3.4, November 2011. This Plan was submitted in response to the DEA publication of a Draft Guiding Document on the Preparation of Industry Waste Management Plans in GN 78 in *GG* 33264 of 11 June 2010.

Act 2008. The primary objective of the IWMP is to consolidate information on EOL electronics take-back system and provide guidance to policy-makers and system architects on the policy tools, configuration alternatives, financing schemes and management alternatives that may be used to operate such systems.[298] The IWMP distinguishes between a collection fee (a fee that will be raised by eWASA for the management process of any e-waste for which no green fee has been raised) and a green fee (the non-commercial recovery of the costs of environmental compliance that will be collected by eWASA from the subscribing EEE producers, the proceeds of which will be utilised to fund the costs of operating eWASA and the National Take Back Scheme).[299] This green fee appears to be similar to the fee charged to producers under the REDISA model. Under the IWMP, producers may also become subscribers to the Plan.[300]

The eWASA plan embodies responsibilities set out under the EPR matrix. It takes cognisance of a producer's economic/financial responsibility, extending the definition of producer to include an importer of new and used EEE. The plan considers the circumstances of importation rather than the manufacture of EEE in South Africa and situates the ideology of the EPR matrix therein. However, it appears that economic responsibility and physical/environmental responsibility under the EPR matrix are the Plan's most pressing concerns, with additional requirements for eco-design in order to avoid specific recycling accidents.[301] The Plan does not expressly address legal liability or informative responsibilities of the producer/importer, but sets out commendable criteria and modes in which e-waste can be effectively collected in South Africa.

Nevertheless, the Plan's existence and widespread membership of the association was insufficient to forestall its members from expressing dissatisfaction with the proposed

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[298] eWASA IWMP, above (note 297) at 3.

[299] Ibid at 6.

[300] Ibid at 20, 37.

[301] The Plan notes that all design-for-recycling motivated product design changes by producers of EEE should be evaluated from a life-cycle perspective to ensure that end-of-life considerations are balanced with other eco-design principles. See p. 4.

IWMP at the time.[302] The members argued that the position on e-waste governance as encapsulated in the Plan appeared not to be representative of many of its members, noting the following loopholes: limited consultation with its members about its adoption, the excessive rate of the proposed ARF, centralised decision-making, limited/exclusive flows of information, and a focus on national and regional policy over developing viable grassroots solutions for small businesses in the formal and informal sector.[303] Perhaps, a main issue for consideration is eWASA's failure to clearly show how the proposed collection fee would be managed and applied for the industry's benefit. As a result, industry members began to gravitate towards the approach advocated by another e-waste industry organisation, SAEWA.

4.7.2 South African E-Waste Alliance (SAEWA)

As at 2011, when eWASA's IWMP was submitted, another non-profit e-waste organisation known as e-Waste Alliance, was already in existence. Although formed in 2005 to cater for recyclers in industry in the Western Cape, it expanded its scope in 2012 to include national recyclers and countries within the southern African region, and became known as the Southern African E-Waste Alliance (SAEWA).[304] Like eWASA, it aims to co-ordinate the responsible collection and downstream management of the electronic waste stream in an integrated system throughout South Africa and Southern Africa. It also brings together independent business partners who are willing to work collaboratively in handling all e-waste stream fractions in industry. This can be achieved in the most integrated and value added manner according to the best technologies locally available, while also ensuring safe data destruction.[305]

Respondent 5, a senior staff member of SAEWA, notes that, to assist SMMEs aiming to set up business as e-waste practitioners, it published a set of documents to assist

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[302] Lawhon, above (note 7) at 79.

[303] Ibid at 79.

[304] See record of interview with SAEWA personnel (Respondent 4).

[305] Text of a draft business plan model for SAEWA shared with the researcher by SAEWA personnel.

with their incorporation into the industry, and to ensure their compliance with the international best practice in environmental management.[306] This includes the development of buy-back centres in all provinces in South Africa, the buy-back centre buys e-waste from informal collectors, light dismantling under the SAEWA Code of Conduct, and sell back to e-waste recycling companies and downstream vendors.[307]

Although eWASA proposes the adoption of a green ARF for e-waste to assist in building facilities for e-waste recycling, SAEWA's drive towards formalising the informal sector and assisting SMMEs in setting up their business appeared to find greater favour with industry members. The industry, particularly the recyclers, was dissatisfied with eWASA's IWMP because it did not appear to be as 'representative' of their interests in comparison with SAEWA's consultative and representative approach as a 'voice of the industry.'[308] Although SAEWA did not draft or submit an IWMP, its proposed initiative aimed at formalising the informal sector and assisting SMMEs appear to be the preferred option; hence, the dissidence in industry regarding eWASA's IWMP.

Nevertheless, the researcher posits that there appears to be an overlap of similar goals put forward by both organisations. While eWASA has successfully positioned itself with the national government as the key representative body, SAEWA has also currently positioned itself as such. SAEWA's main goal of formalising the informal sector and assisting SMMEs is important, and its proposed development of buy-back centres embodies the pure EPR principle (i.e. take-back approaches discussed in Chapter 2). It should also be reiterated that a successful industry approach is best embodied by the ability to clearly encapsulate and promote the EPR matrix as it applies to producers or importers of new and used EEE. The responsibilities proposed under this matrix is not SAEWA's main focus, in comparison with that of eWASA. Therefore, the onus is on these associations to clearly set out the responsibilities of their members, agree on whether a

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[306] Environmental Management System Development Guidelines for SMEs in the e- Waste Sector 'Towards a "Light" Implementation Framework Based on ISO 140001: 2004', and a Best Practice Information Guide for Small South African E-Waste Businesses. See SAEWA Interview, above (note 304).

[307] SAEWA Interview, above (note 304).

[308] See Record of Interview with Respondent 5 below.

strict limitation of responsibilities on the EPR matrix should apply to the producer/importer, or to ensure that there is an extension of the EPR principle to include product stewardship – a sharing of the responsibilities under the EPR matrix with consumers, retailers and recyclers, in conjunction with government. While the perceived rivalry between these two organisations continue, another organisation the Information Technology Association – Producer Environmental Group (ITA-PEG) also actively promotes financial responsibility of producers of EEE. This organisation is discussed below.

4.7.3 Information Technology Association – Producer Environmental Group (ITA-PEG)

Interviews with the Information Technology Association – Producer Environmental Group (ITA-PEG) was not considered in this thesis, since the purpose of its inclusion is to underscore its adherence to the EPR matrix. The information included here were culled from its website and other documents.

ITA-PEG's[309] objective is to 'explore, review and implement cost and … ensure effective compliance mechanisms for the management of WEEE as set forth in the Waste Act 2008.'[310] Lawhon notes that this forum 'is actively promoting an alternative national e-waste management strategy in which producers can choose what kind of system to support and which recyclers to use. Producers will still be financially responsible for costs, but the forum suggests a desire to shift the focus, redistribute responsibility, and re-shape the connotation of the industry.'[311] ITA-PEG also submitted its own Industry Waste Management Plan (IWMP) in terms of the Waste Act 2008, creating some measure of uncertainty among stakeholders as to which (its Plan or that of eWASA) was more

[309] The ITA-PEG is a division of the ITA. The ITA was founded in 1934 and is an industry association that represents ICT companies. Like eWASA, it also has a code of ethics and a constitution. See *http://www.ita.org.za*, accessed on 19 September 2014.

[310] ITAPEG – *http://www.ita.org.za/index.php/template/2012-03-15-11-28-59,* accessed on 31 October 2014.

[311] Lawhon, above (note 7) at 80.

representative of the industry.[312] After discussions with the DEA, it was agreed that the ITA-PEG and eWASA would submit a joint plan to the DEA.[313]

The draft eWASA Information Technology Association (ITA) Industry Waste Management Plan was released in August 2014 for public stakeholder consultation and it differs materially from the previous plans. There appears to be no mention of the proposed green fee. Rather, the Plan advocates, defines and sets the functions of an 'E-waste Responsible Organisation,'[314] Original Equipment Manufacturer (OEM),[315] and distinguishes between 'valuable and non-valuable fractions,' and a 'free rider.'[316]

Commendably, the Plan defines a *producer* as 'the local manufacturer or importer of record of new and/or used EEE to be placed on the South African market at first invoice by sale.'[317] Such a producer/importer will be obliged to manage and finance the e-waste solution in line with EPR. However, the draft Plan notes that this Plan is 'based on the

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[312] Lawhon notes the varying points of considerations proposed by Keith Anderson, Chairman of eWASA and Ruben Janse van Rensburg of HP: The first point of consideration repeated by both Anderson (eWASA) (personal communication 2010; 2011) and Ruben Janse van Rensburg (HP) and instrumental in the formation of ITA-PEG (personal communication, 2010; 2011; 2012) is the system's efficiency.

Anderson repeatedly insisted that a single, unified system enabled efficiency, and the management plan notes the benefits of 'economies of scale' (eWASA, 2011, p. 4). Further, 'a commercial tender process will be instituted in order to allow for free competition in the allocation of e-waste transport and storage contracts.' In contrast, van Rensburg insisted that competition was the key to efficiency and that eWASA was inadequately competitive. The ITA-PEG draft claims that having multiple collection schemes will result in the 'ability to efficiently organise the collection and treatment of e-waste.' See Lawhon, above (note 8) at 10.

[313] Follow-up information obtained via email communication between the researcher and eWASA personnel on 16 September 2014. It should be noted that SAEWA did not submit any IWMP to DEA.

[314] The Plan defines this as a 'private independent non-profit industry e-waste ,management body that provides the registration of all EEE producers and recyclers, producers, market share calculation, obligation determination and recycling industry auditing, producer obligation auditing and obligation fulfilment reporting.

[315] That is, a company that manufactures or assembles the original product under its own brand name. The OEM is also known as a manufacturer. In South Africa, examples include Altech, Acer, Sony Dell, Ericsson, HP, IBM, Samsung, etc. See the full text of the Draft Industry Waste Management Plan shared with the researcher.

[316] See the discussion of valuable and non-valuable fractions above and the definition of a free rider in Chapter 2.

[317] See Draft IWMP, above (note 297). This local manufacturer or importer could be for example an OEM, a retailer, or an importer of new or second-hand EEE.

establishment of the SA E-waste PRO as a core requirement to successfully implement EPR for e-waste.'[318] Consequently, the Waste Management Bureau[319] is considering the establishment of a PRO in the e-waste industry, i.e. a body that all producers, importers, recyclers and refurbishers of e-waste will have to register with. A proposed PRO Board will be set up in accordance with a memorandum of understanding that clearly provides 'the purpose of the E-Waste PRO [is] to implement the principles of extended producer responsibility and regulate the industry.'[320] Accordingly, the PRO's objectives include:[321]

- a requirement that all EEE producers/importers are to register with it and participate through an obligation and fulfilment mechanism to ensure ESM of the collection, dismantling, refurbishment and recycling of e-waste;

- to ensure that all registered e-waste collectors and recyclers will be required to comply with the appropriate standards of resource efficient and environmentally responsible recycling practices in the e-waste market;

- to develop and provide education and training programmes relating to e-waste with government support;[322]

- to facilitate the development and operation of environmental ratings systems for recyclers, researchers, events and general activities to raise awareness of environmentally sustainable e-waste practices for the benefit of all SA's citizens.

From the abovementioned, it appears that the PRO board is particular about incorporating the EPR matrix into its objectives. The obligation regarding e-waste management, recycling practices and environmental ratings are all representative of the tenets of the EPR matrix. To achieve its objectives, it includes an opportunity for eWASA, SAEWA,

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[318] Ibid.

[319] Above (note 202).

[320] Appendix 2 of the eWASA ITA E-Waste IWMP; Product Responsible Organisation (PRO) Memorandum of incorporation.

[321] Ibid.

[322] See SAEWA Interview, above (note 304). In Respondent 4's view, this requirement regarding provision of education is ambiguous. Who exactly is the training being provided to? To the public or recyclers?

ITA-PEG and representatives of stakeholders in industry to sit on the PRO Board and participate in decision-making that may affect the e-waste industry as a whole.[323]

The proposed definition above of a producer/importer is an indication that the industry is aware that the responsibility envisaged under the EPR approach is best placed on the importer, rather than the producer of EEE who is in a developed country. Perhaps the industry realises that it is only practical to place financial, physical and legal responsibility on the importer at the point of importation. It may also realise the need for imposition of a green fee or import levy to facilitate proper recycling and disposal of new or used EEE at its EOL, and prevent attendant generation of e-waste. The Plan explicitly incorporates the EPR EOL mechanism to enable producers to acknowledge their physical, financial, and environmental responsibility to care for the products placed on the South African market, and at the end of the product's life-cycle. Rather than imposing a fee on consumers of EEE, producers' costs are internalised due to a collective industry approach. Additionally, the emphasis on an e-waste PRO is cognisant of the existence of industry associations described above, aimed at representing the interest of handlers in South Africa. Thus, the Plan appears to have considered all the factors necessary for the implementation of the EPR principle as discussed in Chapter 2.

Perhaps the Plan's uniqueness lies in its recommendation of a multi-stakeholder approach in which all actors in the value chain have important roles to play in the area of action they can specifically control, for instance, government, producers, academia, waste reclaimers/pickers, consumers, the e-waste recycling industry and the representation thereof.[324] This proposed approach is indicative of the fact that while the EPR principle is actively promoted and implemented, it also envisages effective implementation by ensuring a wider form of EPR, i.e. PS, by ensuring the co-operation of all stakeholders in the industry. This is in line with what is hypothesised in this thesis: that while a sustainable EPR approach is incontrovertible, and that a producer/importer is obliged to fulfil the responsibilities under the EPR matrix regarding new and used EEE, a more practicable

[323] eWASA Interview, above (note 291).

[324] See the Draft IWMP, above note (297).

implementation of the EPR principle is best achieved by an extension of this responsibility viz product stewardship to include other stakeholders who all have roles to play to ensure sustainable management of e-waste.

Thus, the ensuing part of this Chapter discusses the voluntary roles of these stakeholders (e-waste recycling companies) and the promotion of EPR via recycling activities. The activities of these private companies constitute an informal-voluntary approach.

4.8 E-waste recycling companies as members of industry associations

As identified in Chapter 1 and in the earlier part of this chapter, South Africa – like most developing countries is in Africa – is a net importer of EEE, with massive imports of domestic electronic equipment (TVs, computers, cell phones, washing machines and others),[325] which are significant sources of e-waste in the country. Consequently, the collection of e-waste in South Africa[326] is carried out by both the informal and the formal sectors,[327] with the formal sector being most directly involved in e-waste recycling.[328]

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[325] DEA/ATE, above (note 4) at 95.

[326] However, with regards to collection of waste, the municipalities bear the responsibility to provide waste management services, which include removal, storage and disposal services, as per Schedule 5B of the Constitution. Thus, municipal by-laws regulate day-to-day operations of companies working in the municipalities' boundaries. In practice, this means that e-waste practitioners must register with the local municipality as a waste transporter, waste recycler or waste management company. Failure to do so would mean the company is operating illegally and not allowed to transport or collect e-waste. Such e-waste companies also have to obtain a certificate stating their Broad-Based Black Economic Empowerment (B-BBEE) status. Nevertheless, existing by-laws in each municipality are fragmented with each municipality having its own requirements, while others have no licensing requirements for waste handlers. For example, in Cape Town, section 13 (3) of the Integrated Waste Management By-Law PG 6651 of 21 August 2009 requires registration for any person or entity that handles, transports, process, recycles, re-uses or treats waste. In Johannesburg, the Waste Management By-Laws 2003 requires that hazardous waste collectors, transporters and storage facilities must be licensed and permitted. In the Durban/eThekwini Metropolitan Municipality, the Refuse Removal By-law, PN 47 of 2002 requires the responsible and lawful disposal of hazardous waste and waste accumulation that could cause nuisance. It is expected that future development of integrated waste management plans will solve this problem. See eWASA Technical Guidelines, above (note 169) at 17-19.

[327] The informal sector in South Africa is huge, consisting of collectors who scavenge for valuable waste include e-waste for selling to recyclers/refurbishers, rendering these collectors vulnerable, subject to the dangerous health issues owing to the hazardous nature of e-waste and are open to exploitation by recyclers/refurbishers. See DEA/ATE Document, above (note 4) at 11, 30.

[328] E-waste recycling in this context involves steps such as resorting, shredding, pulverisation and granulation and are the common processing steps done in South Africa by industries that process e-waste. See DEA/ATE Document, above (note 4) at 31.

Hence, the responsibility of this formal sector is e-waste processing, and does not currently apply the EPR principle as practiced in Europe. EEE producers have no direct role in actual recycling of e-waste, besides the application of the financial levy/tax imposed on them to be utilised towards establishment of recycling facilities. Accordingly, companies who take on this responsibility of processing and recycling of e-waste constitute the formal sector.[329] Thus, the formal sector represents recyclers who fulfil all legislative requirements of licensing under the Waste Act 2008, Second-Hand Goods Act 2008, and Precious Metals Act 2009, and who possess the requisite ISO certifications.[330] The researcher identified two leading e-waste recyclers in South Africa: Company A and Company B, both based in Johannesburg. These companies are the oldest recyclers in South Africa. Both were established in 1992 and have a wealth of experience in e-waste recycling. The researcher was only able to secure an interview with Company A, which is ISO 14001 compliant,[331] since Company B's policy does not make provision for the granting of interviews for research. Therefore, a majority of the information contained in this part regarding Company A is culled from the interviews with a Company A staff member (Respondent 5), while most of the information about Company B discussed are

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[329] DEA/ATE, above (note 4) at 31.

[330]Chief among them is the ISO 14001 – Environmental Management Systems refers to an internationally accepted standard that outlines the manner in which an effective environmental management system can be put in place. It is designed to help businesses remain commercially successful without overlooking environmental responsibilities. It was updated in July 2014 to include life-cycle thinking and environmental protection. See 'ISO 14001 Environmental Management,' available at *http://www.bsigroup.com/en-GB/iso-14001-environmental-management/,* accessed on 21 October 2014. See also 'Revision of ISO 14001 Environmental management systems – Requirements with guidance for use' ISO/TC 207/SC 1, 02 July 2014, available at *http://www.iso.org/iso/1n1000_iso_14001_revision_information_note_update,* accessed on 23 October 2014.

[331] Company B is ISO 9001 certified only (i.e. an international standard that gives requirements for an organisation's quality management systems QMS). 'ISO 9001 – What does it mean in the supply chain?' *available at www.iso.org/iso/pub100304.pdf,* accessed on 14 October 2014. Company A is structured according to International Standards 9001, 14001 and OHSAS 18001 and is ISO compliant. See COMPANY A website – *http://ewaste.Company A.co.za/index.php/about-us/who-is-Company A* accessed on 16 October 2014.

derived from results of field research work conducted by Alan Finlay in 2005 and 2008 on Company B[332] as well as other internet documents.[333]

It must be noted that the recycling systems in both companies are not uniform, with Company A involved in the recycling of e-waste fractions and Company B involved in ferrous and non-ferrous scrap metal recycling and cable granulation. Hence, in the interview, the researcher sought information relating to the e-waste recycling process, the socioeconomic and environmental incentives that stem from this, and the extent of compliance with the Basel Convention and SA waste legislation discussed above.

With regards to recycling, storage and disposal, Company B and Company A both have licensed permits obtained in accordance with the Waste Act 2008, enabling them to operate a recycling facility, and a waste processing licence, with Company A also in possession of a Precious Metals Licence and a Second Hand Goods Licence by virtue of the diversity of e-waste fractions it processes and recycles. Finlay notes that the recycling processes among the current operators are not uniform, and depend on proprietary knowledge or systems developed.[334] The researcher agrees with this assertion, in view of the participatory observation carried out during her visit to Company A's plant in Gauteng.

E-waste fractions received by these recyclers vary. Company B receives e-waste such as cell phones, PCs, photocopiers and telephonic equipment, and has also received the occasional TV but not in bulk.[335] Similarly, Company A accepts all household

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[332] See generally Finlay, above (note 5); Finlay and Liechti, above (note 6).

[333] See Ed White and Rohit Singh Cole *Patent Landscape Report on E-Waste Recycling Technologies* (2013) at 128, available at *http://www.wipo.int/edocs/pubdocs/en/patents/948/wipo_pub_948_4.pdf,* accessed 9 December 2015; 'Actors in the South African Recycling System,' available at *http://ewasteguide.info/actors_in_the_south_african_recycling_system*, accessed 9 December 2015; Universal Recycling Company website (last updated 2015), available at *http://www.urc.co.za*, accessed 9 December 2015.

[334] Finlay, above (note 5) at 8.

[335] Per Debbie van Rensburg, Environmental Manager at Company B Recycling. Culled from Finlay, above (note 6) at 8.

appliances and white goods (refrigerators, washing machines, toasters, etc), computers, telecommunications equipment, medical and radio equipment, etc.[336]

The recycling process at Company B includes a sophisticated combination of conveyor belts, shredding, pulverising, water separation, rotary magnets, extractors, granulation, shears and balers. It does not melt down any of its waste.[337] Company B does not do any hand-sorting of material, regarding it as too 'time-consuming to sort by hand.'[338] Conversely, Company A relies heavily on hand-sorting and dismantling of e-waste fractions.[339] Respondent 5, senior staff member of Company A, alludes to the fact that more than 350,000 tonnes of e-waste is generated in South Africa per year, and that Company A manages about 5,000 tonnes a year. Company A's client base includes leading EEE outlets such as Makro, Incredible Connection and HiFiCorp. Its collection initiative is such that these retailers have a contract or arrangement with Company A or other waste disposal company to periodically collect the e-waste for recycling.[340] In addition, and in a bid to create awareness about the need for environmentally responsible e-waste recycling, Company A has a specially designed hatch, of 500mm x 500mm.[341] These hatches are placed at these retail outlets and are large enough to hold about 1,000 tonnes of e-waste at a time.[342]

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[336]Culled from a Company A presentation at my interview with Company A personnel. See record of interview with Company A.

[337] Per van Rensburg, in Finlay, above (note 6) at 8. See also Finlay and Liechti, above (note 5) at 32.

[338] The water used at the plant is also recycled, which is not necessarily inexpensive. See Finlay, above (note 6) at 8.

[339] Ibid at 8. Concerning hand-sorting and dismantling, participatory observance by the researcher at the Company A facility in Gauteng showed Company A's strict adherence to health and safety requirements under legislation for this methods. Workers were provided with protective glasses, hearing protection, gloves, masks and other apparatus. The researcher was also provided with hearing protection and protective eyewear during her inspection of the facility. See Record of Interview with Company A personnel, above (note 336).

[340] Finlay and Liechti, above (note 5) at 29.

[341] The dimension of these hatches were provided by Interviewee C, and these hatches were observed by the researcher during her site visit to Company A's Recycling Facility in Johannesburg in September 2014.

[342] Interviewee C confirms that 'th[e] size [of the hatch] can accommodate most smaller items of e-waste, but should a client require the bin to be opened for a larger item, there is normally someone at store level

However, these hatches are not the only source of e-waste for Company A, as it also receives or buys e-waste such as PC boards and monitors from several other smaller recyclers in the country. Interviewee C elaborated further on the logistics involved in e-waste collection and recycling. While Company A's trucks are basically involved in the collection of the e-waste from these hatches in Gauteng, it outsources this function to a logistics company responsible for national collection of e-waste from these hatches at designated retail outlets in Cape Town and other outlets, and delivered to its head office in Gauteng.[343]

Although Companies A and B are voluntary recycling companies with requisite governmental (DEA) and international certifications/accreditation, their operations are run without interference by government. They have also created employment in their facilities for more than 100 employees. Respondent 5 notes the challenge to its operations in the lack of public awareness of the 'Company A hatch' at EEE retail outlets for recycling. This awareness is currently in the process of being re-vitalised by promoting in-store advertising at these outlets.[344] Nevertheless, it submits information regarding waste volumes received, exported and imported to the South African Waste Information System in accordance with Chapter 6 of the Waste Act 2008.[345]

It must also be noted that Companies A and B are eWASA members. Concerning the current eWASA ITA e-waste IWMP and the proposed PRO Board, which is representative of stakeholders in the industry, such as these companies, Respondent 5 (Company A) encourages the proposed constitution of the Board. He reiterated the need for this proposed PRO to be an industry-driven one, for representative of all stakeholders

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who will unlock the bin in order for goods to be placed inside.' Per follow-up email correspondence between the researcher and Respondent C, 31 October 2014.

[343] See Record of Interview with Company A personnel, above (note 336).

[344] Respondent C notes that 'government should be driving this awareness of the hatch and responsible recycling because they have the requisite infrastructure and funding to do so.' See Record of Interview with Company A personnel, above (note 336).

[345] Company A also registered its e-waste hatches at Makro as a legal entity in terms of it being a drop-off point, to give it more credibility and comply with governmental requirement. See Record of Interview with Company A personnel, above (note 336).

to ensure transparency in administering a proposed recycling fee that is to be imposed on importers and consumers of EEE. He also observes that a PRO administration will be 'less problematic if recyclers registered with the proposed PRO are those which already comply with environmental and EPR principle standards.'[346]

The activities of these voluntary recycling companies are considered to be formalised, because they are authorised to operate under mandatory regulations described above. This differs from the de facto informal sector, which involves unauthorised recyclers, scavengers and refurbishers whose activities are not regulated or registered under law. Accordingly, Companies' A and B efforts are commendable because they promote responsible recycling, and – via the creation of employment, economic incentives and recycling of e-waste – implement the three pillars of sustainable development embedded in the EPR principle. E-waste recycling through hand-sorting and mechanical processes is also another means to achieve the 'desired environmental objective' proposed under the EPR principle, i.e. to reduce the environmental impacts of e-waste. Nevertheless, the role of recycling companies as stakeholders in the industry also enable them to be part of the PRO Board. Perhaps their role may be to influence and advocate the physical/environmental responsibility required of producers/importers under the EPR matrix. The use of less toxic substances in EEE being imported into South Africa will also facilitate effective processing and recycling operations in their e-waste plants.

4.9 Towards a voluntary-mandatory approach to e-waste in South Africa

Part B explored the three different types of voluntary approach dominant in the waste industry in South Africa – a voluntary-to-mandatory approach, an formal-voluntary approach and an informal-voluntary approach. In view of the joint eWASA-ITA Plan, it appears that the e-waste industry is currently moving towards a voluntary to mandatory approach. As noted in Chapter 2, this voluntary-to-mandatory approach is one that was developed originally by industry, but over time, was developed with government. Such joint collaboration between industry and government is strengthened by mandatory legislation to that effect, setting out the responsibilities of both government and industry concerning e-waste management. The Draft Industry Waste Management Plan (IWMP),

[346] Record of Interview with Company A personnel, ibid.

recognises that 'the participation of the Government is key to the success of this e-waste IndWMP.'[347] Therefore, the intention of the Waste Amendment Act 2014 to adopt a pricing strategy for waste streams such as e-waste, and the establishment of a bureau for the management of the PRO Board all allude to the fact that a voluntary-to-mandatory approach constitutes the most appropriate approach to e-waste management in South Africa. SAEWA's proposal to formalise the informal e-waste sector is also indicative of a recognition that voluntary approaches to e-waste must be mandated by regulations. The voluntary-to-mandatory approach also reflects the EPR principle and the EPR matrix, as was revealed in the Plan, and from provisions of the Waste Act. The adoption of this approach may also facilitate and propel the declaration of e-waste as priority waste under the Act in the near future. While it may not be practicable to assume that an e-waste EPR-oriented model may take the form of the ROSE model, the efforts of members of the voluntary industry associations reveal that voluntary approaches must be applied with mandatory regulations in order to achieve successful e-waste management in South Africa.

Conclusion

This Chapter illustrates the notion set forth in Chapter 2 – that 'a truly sustainable society will require a profound change in mind-set and a re-orientation of the values of… national culture.'[348] This exploration of mandatory regulations and voluntary approaches to e-waste in South Africa emphasises the country's attempt to ensure a sustainable-oriented approach to that waste stream. South Africa's international waste obligations under the Basel Convention have resulted in its adopting various policy documents and legislation to guide the regulation of waste in general. Hence, this chapter expatiated on the three sub-divisions of the voluntary approach to waste management identified in Chapter 3 and explored same, based on interviews conducted with waste organisations and e-waste industry associations in South Africa. The analysis of these approaches reveal a variety of pitfalls inherent in their implementation in South Africa. Concerning REDISA, even

[347] Draft IndWMP, above (note 297).

[348] Jenny Goldie et al. *In Search of Sustainability* (2005) at 3.

though there is a single IIWMP in place that implements the EPR principle on producers/importers of waste tyres, SATRP's pending IIWMP submitted to DEA envisages the existence of two Plans for waste tyres in South Africa in the near future. This may distort the effective discharge of producer responsibilities under the EPR matrix, as producers/importers may not know how or if to comply with multiple sets of rules. SAEWA's main purpose is to develop buy-back centres, formalise the informal sector and assist SMMEs that may be interested in becoming formal recyclers of e-waste. eWASA and ITA-PEG's purpose are to ensure compliance with EPR principles to achieve cost-effective measures, and also establish green fees or import levies, which are typical of the financial obligation under the EPR matrix. The three industry associations appear to have different goals, and it is worrisome that a representative capacity of these associations on the proposed PRO Board may result in each association trying to outbid the other in promoting their ideas for the implementation of the EPR principle to e-waste. In a bid to provide clarity and remove any form of ambiguity regarding who a producer is, the proposed IWMP has clearly taken an importer to mean the same person so that such an entity may not escape the legal, physical, financial or informative responsibility envisaged under EPR.

Accordingly, the lessons learned from this jurisdiction are, first, the strict application of the EPR principle, placing sole responsibility on a producer is not practicable in a developing country context. Shared responsibility through the PS must be implemented in alignment with EPR. Second, the ambit of a producer must be extended to mean an importer of new or used EEE in a developing country context, because developing countries such as Nigeria and South Africa do not manufacture EEE and as such, the importation of new and used EEE contribute to the generation of e-waste in both jurisdictions. Third, recent voluntary approaches have formed an integral part of environmental management and appear to be one of the swiftest, most practicable ways in which effective environmental protection can be achieved. They may not need to be formalised before they can have the desired effect. Four, voluntary initiatives must be aligned with the government's notion of sustainable e-waste management, and where necessary, mandatory regulations may be the best way to give effect to voluntary initiatives on e-waste. Finally, the EPR principle and the EPR matrix cannot be separated

from any discourse regarding approaches to e-waste management, and the administration and achievement of the responsibilities under the EPR matrix must be clearly set out in policy documents and/or strategies to guide its application in any jurisdiction.

This chapter did not seek to present the South African model as flawless. Rather, it highlighted the realities of its implication in a developing country context in order that Nigeria may avoid the above pitfalls in the development of policy and strategies for e-waste via the EPR principle. In view of this, Chapter 5 examines e-waste regulations in Nigeria with a view to ascertaining the extent to which the EPR principle has been applied in that jurisdiction, and the prevailing approach (voluntary or mandatory) to e-waste management therein and what improvements could be made by following the SA approach.

CHAPTER 5

AN ANALYSIS OF E-WASTE MANAGEMENT IN NIGERIA

Introduction

As indicated in Chapter 3, it has been the practice of developed countries to export EOL[1] unusable EEE to developing countries. This practice has been referred to as 'dumping' in the 1989 Basel Convention and the 1991 Bamako Convention. While in Chapter 4, it was identified that South Africa is not 'one of the target dumping sites in the world'.[2] E-waste is also dumped in Nigeria under the guise of shipment of used EEE to Nigeria for re-use or recovery. The countries involved in such shipments include Germany, the U.S., South Korea, the UK and other developed countries.[3]

The drive behind such dumping is fuelled by a recognition of the digital divide in most developing countries[4] – with only a small number of wealthy persons having access

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[1] Nnorom and Osibanjo provide reasons why a product reaches its end-of-life. These reasons include technical obsolescence (the product itself is worn out and no longer functioning properly); economic obsolescence (new products in the market are more economic in terms of cost); feature obsolescence (new products have come onto the market that offer more or better features); and aesthetic obsolescence (new products in the market have a nicer look or more fashionable design from the point of view of the consumer). See I C Nnorom and O Osibanjo 'Overview of electronic waste (e-waste) management practices and legislation, and their poor application in the developing countries.'(2008) 52, *Resources, Conservation and Recycling* 843-858. See also Olakitan Ogungbuyi *et al., e-Waste Country Assessment Nigeria*, e-Waste Africa Project of the Basel Convention, May 2012 at 11, available at *http://ewasteguide.info/files/Ogungbuyi_2012_BCCC-Empa.pdf*, accessed on 13 October 2014.

[2] Stephanie Nieuwoudt 'Opportunites Spring from e-Waste' 6 October 2009, available at *http://www.ipsnews.net/2009/10/environment-south-africa-opportunities-spring-from-e-waste*, accessed on 13 September 2014.

[3] Basel Action Network (BAN) *The Digital Dump – Exporting Re-use and Abuse to Africa* Media Release Version, 24 October 2005 at p. 24; 'Nigeria: Toxic Dumping Ground for Electronic Waste' 19 February 2009, available at *http://www.redorbit.com/news/technology/1641894/nigeria_toxic_dumping_ground_for_electronic_waste/,* accessed on 20 October 2014.

[4] The *digital divide* refers to the difference in access to ICT between developed and developing countries and access to ICT is an indicator of a country's social and economic development. Dr. Hamadon Toure, Secretary of the International Telecommunications Union (ITU), stated at the 2005 Summit of the Information Society, Tunis, that access to broadband technology was the key to the continent's development. See Paul Omorogbe 'The sweet sour story of e-waste in Nigeria' 25 March 2014, available at *http://www.tribune.com.ng/component/k2/item/1979-the-sweet-sour-story-of-e-waste-in-nigeria/1979-the-sweet-sour-story-of-e-waste-in-nigeria,* accessed on 10 November 2014.

to certain ICT wares (such as mobile phones, computers, etc.) especially branded new equipment.[5] The general populace in Nigeria is poor[6] and, having no means to afford same, seek ways to assuage the 'natural hunger to stay abreast of technological developments in order to compete and communicate in an increasingly globalised world.'[7] Hence, domestic and international trade in used EEE presents a possible, and important avenue to stimulate the dissemination of information technology and bridge the gap between the 'haves and the have-nots.'[8]

Developed countries are aware that the potential value of discarded EEE – as a reusable technology, a spare part, a component or a source of raw materials – is a significant driver of exporting to West African countries such as Nigeria.[9] Such export of used EEE to Nigeria is justified 'as destined for re-use, repair, to help bridge the "digital divide,"'[10] but also in the awareness that existing general waste legislation in Nigeria is not properly implemented and enforced.[11] More than 500,000 units of second-hand desktop computers are imported into Nigeria through the ports every month,[12] and it appears to be the most favoured waste stream in the world for transboundary movement into the continent. Nigeria is also Africa's largest mobile market with more than 110m

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[5] Olakitan Ogunbuyi *et al.,* above (note 1) at 10.

[6] The World Bank ranks Nigeria as one of the top five countries in the world with the largest number of poor. It currently ranks third, with its poverty head count ratio at national poverty lines (%) of population set at 46.0% in 2010. See The World Bank IBRD/IDA Data 'Nigeria,' available at *http://data.worldbank.org/country/nigeria,* accessed 12 June 2015. See also Omoh Gabriel, 'Nigeria, third on world poverty index – World Bank' April 11, 2014, available at *http://www.vanguardngr.com/2014/04/440695/,* accessed on 12 June 2015.

[7] *The Digital Dump,* above (note 3) at 1.

[8] Ogunbuyi *et al.,* ibid at 10.

[9] Djahane Salehabadi 'Transboundary Movements of Discarded Electrical and Electronic Equipment' Solving the E-Waste Problem (StEP) Green Paper Series, 25 March 2013 at 10, available at *http://isp.unu.edu/publications/scycle/files/ewaste_flow.pdf,* accessed 18 February 2015.

[10] *The Digital Dump*, above (note 3) at 10.

[11] Ibid at 6.

[12] Fatima Badiru Ibrahim et al. 'Material Flow Analysis of Electronic Wastes (e-Wastes) in Lagos, Nigeria' (2013) 4 *Journal of Environmental Protection,* 1011 at 1012.

subscribers, and has a total subscription of 117m fixed and mobile lines as at 2013.[13] Consequently, Nigeria's e-waste generation is by far the highest in West Africa. Volumes that are sold, scrapped or illegally dumped[14] have manifold impacts on the environment, local communities and the economy in Nigeria.[15] Thus, while a 2011 study asserts that 91% of total imports of used or second-hand EEE entering the country are functional or repairable equipment, not waste,[16] another 2012 study notes that 'approximately 30% of such imports are estimated to be non-functioning (i.e. e-waste), with half of the 30% sold to consumers and the other half unrepairable. This means at least 100,000 tonnes of e-waste entered the country illegally in 2010.'[17]

Sinha-Khetriwal *et al* state that, 'for an e-waste recycling system to be sustainable, it must also have the ability to adapt flexibly to future changes in the quantity and quality of e-waste flow.'[18] This means that the best available practices from different countries can be adopted to effectively manage e-waste.[19] In view of Nigeria's international law obligations relating to sustainable development under Agenda 21 (described in Chapter 2), and its obligations under the 1989 Basel Convention, the flexibility and adaptability of e-waste regulations in this jurisdiction is analysed in this chapter. The chapter also examines the extent to which the country has integrated the three pillars of sustainable development

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[13] This subscription has a tele-density of 83% and is expected to reach 98% by 2015. See O A Babatunde *et al.,* 'Mobile Phone Usage and Battery Disposal in Lagos, Nigeria' (2014) 4(4) *International Journal of Applied Psychology*, at 147.

[14] Nigeria: Toxic Dumping Ground for E-Waste, above (note 3), ibid.

[15] Andreas Manhart *et al., Informal e-waste management in Lagos, Nigeria – socio-economic impacts and feasibility of international recycling operations*, Final report of component 3 of the UNEP SBC E-waste Africa Project, June 2011 at 1, available at *http://www.oeko.de/oekodoc/1371/2011-008-en.pdf,* accessed on 14 October 2014.

[16] Manhart *et al.,* ibid; Josh Lepawsky 'The changing geography of global trade in electronic discards: time to rethink the e-waste problem' (2014) *The Geographical Journal* pp. 1-12 at 5.

[17] Ogungbuyi *et al.,* above (note 1) at 3. See also Lepawsky, ibid at 5.

[18] D Sinha-Khetriwal, Philipp Kraeuchi and Markus Schwaninger, 'A comparison of electronic waste recycling in Switzerland and India' (2005) 25 *Environmental Impact Assessment Review* 492 at 503. See also Henry Aborele 'Understanding E-Waste in Nigeria: Policy Development and Implications' RIBM Doctoral Symposium 2013, Manchester Metropolitan University at 6.

[19] Aborele, above (note 18) at 6.

and its recognition of the EPR principle for e-waste management. The country's regulatory efforts in the face of importation and the attendant volumes of e-waste generated in the past decade informs the analysis of same. It further examines the extent to which the country has embraced the application of EPR in e-waste management since 2009, following a clear call for action to Nigeria's government to encourage and enforce collection, recovery, re-use and recycling of e-waste.[20] Against the backdrop of the mandatory and voluntary approaches on e-waste in South Africa, this chapter further highlight government's efforts in enforcing existing e-waste legislation and the practical application of the EPR principle to producers and importers of new and used EEE. The Chapter concludes by identifying the patent deficiencies in Nigeria's efforts to tackle e-waste importation, and futuristic efforts by the government to correct same.

5. A background to e-waste management in Nigeria

As noted in Chapter 1, the 1998 Koko Toxic Dump incident in Nigeria exposed the extent of the trade in hazardous waste between developed and developing countries at the time. Between 2010 and 2013, it became more apparent that Nigeria had become a hub for the dumping of e-waste by waste brokers in developed countries, because of the existing informal market for refurbishment of used e-waste and the extraction of precious metals from unusable EEE.[21]

Currently, Lagos State – Nigeria's economic centre – is one of the world's largest cities and has developed into West Africa's main entry point for used and EOL EEE.[22] A Basel Action Network 2005 investigative study of the importation of e-waste into Nigeria identified the UK as one of the main states exporting WEEE to Nigeria,[23] with a recent

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[20] This call for action was made at the NESREA International Conference on E-Waste Control, Abuja, Nigeria, 20-21 July 2009. See *Communique of the Abuja Platform on E-Waste,* available at *http://www.basel.int/Portals/4/Basel%20Convention/docs/eWaste/E-waste_Abudja_Platform_20090821.pdf,* accessed 9 November 2014. See also Y A Adeniran and A. Abdulkarim 'Challenges of Electronic Waste Management in Nigeria' (2012) *International Journal of Advances in Engineering and Technology* 640 at 644.

[21] The examples of the e-waste dumping incident are set out in Chapter 1.

[22] Manhart *et al.,* above (note 15) at 1. See also Karin Lundgren *The global impact of e-waste – addressing the challenge* (2012) 16.

[23] *The Digital Dump*, above (note 3) at 24.

study demonstrating the UK's dominance (at 60%), followed by Germany (Hamburg) (at 16%).[24] The BAN study also revealed that an estimated 500 containers per month of second-hand computer-related electronic equipment arrives in Lagos each month. Such containers contain on average about 800 monitors or CPUs, equating to about 400,000 second-hand or scrap units entering into Lagos every month.[25] In addition, since more than 75% of imported waste is unusable junk and is not economically repairable or marketable, it ends up being discarded and routinely burnt in what the BAN calls a 'cyber-age nightmare now landing on the shores of developing countries.'[26]

The volumes of these imported e-waste currently entering the country is motivated by the fact that four thriving e-waste markets exist in Lagos, which evolved for the purpose of repairing and refurbishing old electronic equipment, including computers, monitors, TVs, cell phones, etc.[27] General refurbishing, collection and recycling of used and EOL EEE take place at these markets. The most prominent of them are Alaba International Market and Ikeja Computer Village (with more than 2,500 to 3,000 small businesses in the field of refurbishing and marketing used EEE), and the Oshodi and Lawanson Markets.[28] A socioeconomic assessment of these informal e-waste markets in Nigeria identifies four stages of e-waste recycling from the imports into Nigeria – collection, refurbishing, recycling and final disposal.[29] Three main categories of people are also identified with specific roles in such markets: collectors, refurbishers and recyclers.

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[24] Ogungbuyi *et al.,* above (note 2) at 51.

[25] *The Digital Dump,* above (note 3) at 14.

[26] 'Broadband Enabled Innovation' GRU 2011 Discussion Paper (2011) International Telecommunications Union (ITU) at 18, available at *http://www.itu.int/ITU-D/treg/Events/Seminars/.../GILF01-Broadband-E.pdf,* accessed 17 November 2014. See also *The Digital* Dump, ibid at p. 7.

[27] ITU 2011 Discussion Paper, above (note 26) at 17.

[28] Manhart *et al.,* above (note 15) at 2.

[29] Ibid at 8.

Collectors refer to actors who collect e-waste,[30] and such collectors could be formal (i.e. designated by law to do so) and informal collectors (i.e. those who do so illegally). The informal waste collectors (also referred to as scavengers) range from under-aged children and adults, who move around Lagos with handcarts to collect e-waste, together with other metal-containing wastes from roadside waste dumps.[31] Whatever e-waste they collect is sold to recyclers.

A 2005 BAN study notes that the focus in these four markets is mostly on repair rather than material recovery of valuable e-waste fractions.[32] Thus, refurbishers or repairers transform old and/or non-functioning EEE into second-hand and functioning equipment, either by replacing or repairing defective components and/or by performing cleaning and repair activities in order to make the second-hand equipment appealing to customers.[33] The market potential for refurbishers is large, since most EEE brought into the country is unusable. The importer, after sorting the functional ones from the faulty ones, sells the faulty ones as non-tested to customers, who after purchase, gives the faulty ones to refurbishers/repairers.[34] These refurbishers operate with certain categories of EEE such as mobile phones/MP3s, TVs, radios, fans, CD-players, and may repair all brands of electronics in their category of interest.[35] The purpose of refurbishment/repair in these markets is to extend the lifespan of the EEE, but these repair shops also often serve as a dumping ground for used and broken equipment before final disposal in open dumpsites in Lagos.[36]

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[30] Ibid at 8-10.

[31] Ibid at 17, XII.

[32] *The Digital Dump,* above (note 3) at 20.

[33] Manhart *et al.,* above (note 15) at 9.

[34] Among the non-tested, those found to be unserviceable are dismantled and the good components are removed to serve as spare parts. See Ogungbuyi *et al.,* above (note 1) at 70.

[35] Ibid at 68.

[36] Ibid at 69.

Recyclers are individuals who dismantle and separate fractions and recover materials from e-waste. They operate around these second-hand markets and disassemble obsolete EEE in order to liberate metals such as steel, aluminium and copper that can be sold to traders.[37] For instance, cables and other plastic parts are incinerated to liberate copper, or certain types of PWBs are separated, collected and sold to traders.[38] However, these recyclers produce a significant amount of additional waste or waste components, as these obsolete EEE contain many fractions that may be of no economic value in Nigeria. These fractions are usually disposed of or burned in an uncontrolled manner in or around recycling clusters.[39] Legislation has been adopted to regulate these categories of players in the EEE chain in Nigeria, but it appears that these informal, second-hand markets constitute voluntary initiatives in this jurisdiction. Later in this chapter, mandatory legislation and voluntary initiatives are discussed. In a bid to highlight the influence which international treaties discussed in Chapter 3 have on national e-waste legislation in Nigeria, its international obligations for the management of hazardous waste are set out.

5.1 Nigeria's international hazardous waste obligations

Nigeria's attempt to integrate sustainable development practices and procedures into its regulations are premised on the stand by the UN Conference on Environment and Development (UNCED) in 1992: 'without improving environmental management, development will be undermined and without accelerated development, the environment will continue to degrade.'[40]

Nigeria's Agenda 21 programme seeks to, among others, commence a transition to sustainable development, and address sectoral priorities, plans, policies and strategies for

[37] Manhart *et al.,* above (note 15) at XII, 10; Ogungbuyi *et al.,* above (note 1) at 70.

[38] Manhart *et al.,* above (note 15) at 11.

[39] Ibid at 29.

[40] Federal Environmental Protection Agency *Draft Objectives and Strategies for Nigeria's Agenda 21*, at 3, available at *http://www.nesrea.org/images/NIGERIA'S%20AGENDA%2021.pdf,* accessed on 11 November 2014.

the major sectors of the economy,[41] one of which is waste management. The extent to which this transition to sustainable development has been interspersed in the e-waste sector will be analysed subsequently. Currently, Nigeria is a signatory to several which largely control the transboundary movement and dumping of hazardous waste from developed to developing countries. These include:

- the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal 1989;
- the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa 1991;[42]
- the Basel Ban Amendment 1995;
- the Minamata Convention on Mercury 2013.[43]

As pointed out in Chapter 3, the Basel Convention was adopted to prevent the 'economically motivated dumping of hazardous wastes from richer to poorer countries like Nigeria.'[44] Nigeria's ratification of the Convention on 13 March 1991 obligates it to prohibit the importing and exporting of hazardous waste for disposal,[45] and to adopt appropriate legal, administrative and other measures to implement and enforce the Convention.[46] However, international treaties and conventions signed by Nigeria's

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[41] Ibid at 3.

[42] Nigeria signed the Bamako Convention on 22 December 2008 but is yet to ratify it. See 'Africa Union 'List of Countries which have signed, ratified/acceded to the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movements and Management of Hazardous Wastes within Africa,' 04/06/2013 at p. 2, available at *www.au.int/en/sites/default/.../Bamako%20Convention.pdf*, accessed on 20 May 2014.

[43] Nigeria signed the Minamata Convention on 10 October 2013, but is yet to ratify it. See United Nations Treaty Collection Database 'Minamata Convention on Mercury,' available at *https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-17&chapter=27&lang=en*, accessed on 10 June 2015.

[44] Ogungbuyi *et al.,* above (note 1) at 12.

[45] See UNTC Database Basel Convention Status as at 11-11-2014, available at *https://treaties.un.org/Pages/ShowMTDSGDetails.aspx?src=UNTSONLINE&tabid=1&mtdsg_no=XXVII-3&chapter=27&lang=en#Participants*, accessed 17 November 2014.

[46] Article 4.

government do not automatically have the force of law in Nigeria. [47] Section 12 (1) of the Constitution of the Federal Republic of Nigeria 1999 provides that 'no treaty between the Federation and any other country shall have the force of law, except to the extent to which such treaty has been enacted into law by the National Assembly.' This means that any treaty or convention to which Nigeria is a signatory must be passed into law by the National Assembly for it to be enforceable in Nigeria.[48]

At the time of the 1988 Koko Incident (discussed in Chapter 1), the Basel Convention had not yet been adopted. It was after the Koko Incident that Nigeria's government adopted the Harmful Waste Act in 1988. Consequently, the repatriation of the Koko toxic waste back to Italy (as described in Chapter 1) was possible, because Nigeria appeared to reaffirm a principle of the Rio Declaration of 1992, which enjoined States not to cause damage to the environment of other States or areas beyond the limits of national jurisdiction.[49] Prior to Nigeria's adoption of e-waste-specific legislation in 2011, it struggled with the control of importation of hazardous e-waste into its jurisdiction, because exporting countries were able to circumvent the Convention's provision that criminalises illegal trafficking in hazardous waste.[50] Exporting countries relied on the provisions of Annexes VIII and IX of the Convention which legalises electrical and electronic assemblies (including PCBs, electronic components and wires) 'destined for direct re-use, and not for recycling or final disposal.'[51] This means that used electronic equipment that is functioning and is intended for direct re-use should not be considered a waste, regardless of whether or not it is hazardous.[52] Additionally, Annex IX defines re-

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[47] Nwabueze Anachebe 'Maritime Labour Convention is ratified amid constitutional issues' 20 August 2014, available at *http://www.internationallawoffice.com/newsletters/Detail.aspx?g=db75b13b-2eab-40c0-8808-21b34d52b54a,* accessed on 14 February 2014.

[48] Ibid. See also *Abacha and Others v Fawehinmi* (2001) AHLR 172, per Pats-Acholonu, JCA at para. 14.

[49] Principle 2 of the Rio Declaration.

[50] Article 4 (3) and Article 9 (a)-(e).

[51] These Annexes were adopted at COP-4 of the Basel Convention in May 1998. See page 8 of Chapter 3.

[52] See footnote 15 of List B (B1110) of Annex IX. See also BAN Delegate Alert 'Preventing the Digital Dump: Ending Re-use Abuse,' available at *http://www.ban.org/wp-content/uploads/.../OEWG8_Delegate_Alert_2.pdf*, accessed on 21 October 2014.

use to include 'repair, refurbishment or upgrading, but not major reassembly.'[53] Exporting countries exploited this interpretation of re-use and the ambiguity of used EEE not being regarded as a hazardous waste to facilitate their exporting of UEEE to Nigeria under the guise of re-use. Thus, most consignments shipped into the country, an admixture of EEE and WEEEE, are not shipped as wastes, but as second-hand or UEEE.[54] This major loophole in the Convention facilitated the drive by countries to export used EEE to Nigeria (this is still ongoing, as will be shown subsequently), particularly in the absence of the requisite governmental and stakeholder investment into the development of registered landfill sites and recycling facilities for the imported UEEE.

The Basel Ban Amendment 1995, which seeks to amend this loophole in the Basel Convention, discourages any and all trade in e-waste under any guise. Although the Ban Amendment is not yet in force, Nigeria ratified the Ban Amendment on 24 May 2005.[55]

5.2 Nigeria's waste management policy

The Koko Incident (see Chapter 1) spurred Nigeria's government into action and led to the adoption of:

a) the National Policy on the Environment 1989;

b) the Harmful Waste (Special Criminal Provisions, etc.) Decree of 1988; and

c) the Establishment of the country's first Federal Environmental Protection Agency (FEPA),[56] established under the FEPA Act 1988.

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[53] Footnote 14 of Annex IX of the Basel Convention 1989, available at *http://www.basel.int/Portals/4/Basel%20Convention/docs/text/BaselConventionText-e.pdf,* accessed on 19 June 2014.

[54] Oladele Osibanjo 'Electronic Waste: A Major Challenge to Sustainable Development in Africa, at 2, available at *http://www.researchgate.net/.../228410978_Electronic_waste_a_major_challenge...*, accessed on 12 November 2014.

[55] Ban Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Geneva, 22 September 1995, available at *http://www.basel.int/Countries/StatusofRatifications/BanAmendment/tabid/1344/Default.aspx,* accessed 21 April 2014. See also United Nations Treaty Collection Database 'Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Status as at 10 June 2015, available at *https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-3-a&chapter=27&lang=en,* accessed on 10 June 2015.

[56] This agency has now been replaced by NESREA under the NESREA Act 2007.

The latter two pieces of legislation are discussed later in this Chapter, and the part below highlights the significance of the National Policy on the Environment (NPE).

5.2.1 Nigeria's National Policy on the Environment 1989

In September 1998, Nigeria's government, in conjunction with UNEP, organised the International Workshop on the Goals and Guidelines of the National Environmental Policy in Nigeria. This was the first major step by the government to re-adjust the nation's relationship with the environment based on the principle of sustainable development and proper management of the environment and its resources.[57] The workshop developed proposed goals and guidelines providing a new and firm foundation for developing policies, law and institutions for environmental protection and improvement. The government adopted the workshop findings and formally made them public in November, 1989 through the publication the National Policy on The Environment (NPE).[58]

The NPE's main goal is to achieve sustainable development, including providing a viable national mechanism for co-ordination, co-operation, regular consultation as well as harmonisation and management of policy formulation and implementation processes.[59] The revised NPE of 1999 identifies sanitation and waste management as one of the 14 key sectors requiring integration of environmental concerns and sustainability with

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[57] 'Recent Developments in Nigeria Strengthening Legal and Institutional Framework for Promoting Environmental Management' Paper Presented by Justice L. M. Uwais (Chief Justice of the Supreme Court of Nigeria at the time) at the *Global Judges Symposium on Sustainable Development and The Role of Law,* Johannesburg, South Africa, 18 -20 August, 2002 at 1, available at *http://www.unep.org/delc/Portals/119/publications/Speeches/NIGERIA.pdf*, accessed on 18 July 2014.

[58] Ibid. This policy was revised in 1999 to account for developments in the field of environmental protection. See Lisa Stevens 'The Illusion of Sustainable Development: How Nigeria's Environmental Laws are Failing the Niger Delta' (2011) 36 *Vermont Law Review* pp. 387-407 at 394; Kaniye S A Ebeku 'Oil and the Niger Delta People in International Law: Resource Rights, Environmental and Equity Issues' (2006) 5, *Oil, Gas & Energy* Law (*Special Studies Series)* at 188.

[59] Olanrewaju Fagbohun, 'The Emergence and Development of Environmental Law in Nigeria (1960 – 2010)' in E Azinge and N Aduba, *Law and Development in Nigeria – 50 years of Nationhood* (NIALS Press, Abuja, 2010) 346 at 327.

development.[60] The Revised NPE also recognised that the policy's success depends on its inclusion of the sustainable development principles discussed in Chapter 2, particularly the PPP.[61] The Revised NPE further notes that in enunciating a national policy on the environment, attention must be paid to the various institutional settings and professional groupings as well as the complex historical, social, cultural and legal considerations that have been and continue to be involved in the identification and implementation of measures designed to solve national environmental problems.[62] Accordingly, it appears that the Revised NPE's consideration of sociocultural and legal considerations influencing national environmental problems are indicative of its underpinnings of sustainable development, which is an integral part of e-waste management. This necessitates its inclusion in this part of the chapter, to show that the policy document is oriented to sustainability.

Although the NPE has been critiqued as '[a] lofty policy statement without concrete enforcement mechanisms… thus creat[ing] an impression that [the government] was not really serious about protecting the environment,'[63] it paved the way for the adoption of other legislation on environmental protection in Nigeria.[64]

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[60] These 14 sectors of Nigeria's economy are: Human Population; Land Use and Soil Conservation; Water Resources Management; Forestry; Wildlife and Protected Natural Areas; Marine and Coastal Area Resources; Sanitation and Waste Management; Toxic and Hazardous Substances; Mining and Mineral Resources; Agricultural Chemicals; Energy Production; Air Pollution; Noise in the Working Environment, Settlements, Recreational Space; Green Bells, Monuments and Cultural Property. See 'Partners for Water and Sanitation: Note on Project Reports' July 2010 at 85, available at *http://*wedc.lboro.ac.uk/.../NIG04c_NESREA_workshop_**report**_Apr10.pdf, accessed on 19 July 2014.

[61] *Draft Revised National Policy on the Environment 1998* under the auspices of: UNDP Supported Environment and Natural Resources Management Programme for Nigeria (NIR\C3) 199 at 1-2, available at *http://www.nesrea.org/environmentalpolicies.php,* accessed 21 July 2014.

[62] Ibid.

[63] O Oluduro 'Environmental Rights: A Case Study of the 1999 Constitution of the Federal Republic of Nigeria' *Malawi L. J.*, Vol. 4, (2010), pp. 255 at 257.

[64] Such policy documents include the National Action Programme to combat Desertification and mitigate the effects of drought 2000; Draft National Forest Policy 2002; National Environmental Sanitation Policy 2005; National Biosafety Policy 2005; National Policy on Erosion and Flood Control 2006; and National Policy on Chemicals Management 2009. It should be noted that the NPE also paved the way for another initiative in 1990, the National Council on Environment, the highest policy-making body in the environment sector, which provides a forum for interaction and harmonisation of environmental management across the nation. This is discussed later in this chapter.

The next part of this chapter has two parts, for the sake of clarity. In view of the identification by the researcher in Chapter 2 of the specific classification of voluntary and mandatory approaches that may be applied in ensuring effective e-waste management, in Part A, mandatory regulations on e-waste in Nigeria is analysed, while in Part B, voluntary initiatives, specifically the informal-voluntary approach to e-waste management in this jurisdiction are identified.

PART A

5.3 National legislation

5.3.1 The Constitution of the Federal Republic of Nigeria 1999

The Constitution of the Federal Republic of Nigeria 1999 is important in the analysis of e-waste regulations and environmental protection in Nigeria.[65] The environmental provision is set out in Section 20, under Chapter II of the Constitution, entitled Fundamental Objectives and Directive Principles of State Policy. The section provides that 'the State shall protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria.' Section 17 (2) (d) under the same chapter lends credence to this section, with its provisions requiring that 'the exploitation of human or natural resources in any form whatsoever for reasons, other than the good of the community, shall be prevented.'

Unfortunately, the section 20 provision that enjoins the State to 'protect and improve the environment' does not confer an environmental right, as 'the government's obligation set out therein is not mandatory but merely directory.'[66] The placement of the

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[65] In a bid to develop a framework within which the goals of protecting the environment can be realised, the Constitution allocates certain legislative duties to three tiers of government – the Federal Government, State Governments and the Local Governments. Additionally, legislative powers to make laws with respect to environmental management are vested in the National Assembly, which consists of a Senate and a House of Representatives. The National Assembly consists of a Senate and a House of Representatives. It is empowered to make laws with regards to environmental matters contained in the Exclusive Legislative List set out in Part II of the Second Schedule of the Constitution. Such environmental matters include Item 29 – fishing and fisheries; Item 40 – national parks; Item 41 – nuclear energy. See also section 4(2) of the Constitution. See also Ogungbuyi *et al.,* above (note 1) at 41.

[66] Olanrewaju Fagbohun, 'Reappraising the Nigerian Constitution for Environmental Management' (2002) 1 (1), *Ambrose Alli University Law Journal,* 24 at 44, 45.

environmental provision in a chapter entitled 'Fundamental Objectives and Directive Principles of State Policy does not confer an automatic environmental right and merely makes the provision non-justiciable. Fagbohun notes that section 20 is 'an initiative that is grossly incapable of catalysing desired environmental policy performance.'[67] This provision places no corresponding legal right on citizens to enforce such provision or any other provisions of the chapter in the event of non-compliance by the State.[68] The reason for this state of affairs is the wording of section 6 (6) (c) of the Constitution:

> The judicial powers vested in accordance with the foregoing provisions of this section [i.e. the courts]… shall not, except as otherwise provided by this Constitution, extend to any issue or question as to whether any act or omission by any authority or person or as to whether any law or any judicial decision is in conformity with the Fundamental Objectives and Directive Principles of State Policy set out in Chapter II of this Constitution.

Although sections 17 (2) (d) and 20 do not, *ab initio*, create substantive rights,[69] they can be referred to as 'ideologically potent as objectives and principles that the Nigerian State is obliged to pursue.'[70] Ojo expresses misgivings on the intent of Chapter II of the Constitution. He posits:

> The directive principles of the Nigerian Constitution… are more akin to moral rather than to legal precepts as they are non-justiciable. They are mere pious hopes and aspirations, which could be likened to a cheque on a bank payable whenever the resources of the bank permit. It could at best be suitable for the

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[67] Fagbohun, above (note 59) at 346.

[68] Emeka Polycarp Amechi, *The Millennnium Development Goals (MDGs) and National and International Policy Reform: Realising the Right to A Healthy Environment in Africa'* Ph.D. thesis, Faculty of Commerce, Law & Management, University of Witwatersrand, Johannesburg at 104, available at *http://*wiredspace.wits.ac.za/handle/10539/7678, accessed on 21 October 2014.

[69] A substantive environmental right implies some actual change in priorities and in expected outcomes of environmentally significant decisions. It differs from procedural environmental rights, which are confined to safeguards for the participation of environmental advocates. See J. Benidickson *Environmental Law* 3ed (2009) 53.

[70] O Ajai 'The balancing of interest in environmental law in Nigeria' in M Faure and W du Plessis (eds), *Environmental Law in Africa* (2011) 338.

> preamble of the Constitution or the manifesto of political parties. As it happens, they are merely a set of platitudes designed by clever politicians to hoodwink the credulous Nigerian masses.[71]

Fagbohun puts forward the idea that the introduction of section 20 raised hopes that environmental issues has finally been raised to a constitutional level. He notes that while some viewed the provisions as fairly narrow and remote to make any impacts on environmental challenges, others were simply content to see these provisions more as "imagined" than as "real" safeguards.[72] He also describes the provisions of section 20 as 'quite broad', with much limitation on its enforcement,[73] adding that government's observance of the environmental provisions therein is not mandatory but merely directory.[74] Hence, an individual or group of persons cannot rely on the provisions to bring an environmental action against a multinational company (MNC) whose activities are causing pollution or harm to its community.[75] This is in total contrast to the South African constitutional environmental right provision in section 24, which falls under its Bill of Rights Chapter[76] (as discussed in Chapter 4). Section 24 clearly recognises an environmental right that is justiciable. The section's wording further denotes the need for a pollution-free environment and the importance of promoting the socioeconomic and environmental pillars of sustainable development.

In Ogbodo's view, section 20 is beyond the scope of judicial review.[77] Justice Akinola Aguda further laments this predicament:

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[71] 'The Great Debate: Nigerian View Point on Draft Constitution' organised by the *Daily Times of Nigeria,* 1976/77 p. 42 in Emmanuel E Okon, 'The environmental perspective in the 1999 Nigerian Constitution' (2003) 5 *Envtl. L. Rev.* 256 at 268.

[72] Olanrewaju Fagbohun, above (note 66) at 44, 45.

[73] Ibid at 45.

[74] Ibid.

[75] Irekpitan Okukpon-Adesanya 'Gas Flaring and Environmental Rights: The Nigerian Context' (2013-2014) (2) *Journal of Contemporary Law, University of Nigeria* 167 at 178.

[76] Constitution of the Republic of South Africa1996, s 24.

[77] S Gozie Ogbodo 'Environmental Protection in Nigeria: Two Decades after the Koko Incident' (2010) 15 (1) *Annual Survey of International and Comparative Law*, 1 at 8. See also Stevens, above (note 58) at 402.

> I feel much concerned to think that the Directive Principles are to be regarded as a mere ideal, a utopia, the arrival of which the citizen can only pray and hope for, but in respect of which he can hope for no assistance whatsoever from the courts. If this were so, then wherein lies [sic] the expectations and hopes of a bright future for the teeming millions of our people who manage merely to survive at near starvation level.[78]

Nigeria's Supreme Court has reaffirmed the non-justiciability of this chapter in *Attorney –General, Ondo State v Attorney – General, Federal Republic of Nigeria.*[79] It held that:

> [a]s to the non-justiciability of the Fundamental Objectives and Directive Principles of State Policy, s. 6 (6) (c)… says so. While they remain mere declarations, they cannot be enforced by legal process, but would be seen as a failure of duty and responsibility of State organs if they acted in clear disregard of them… the Directive Principles can be made justiciable by legislation.[80]

The Supreme Court's statement as to the non-enforcement of Chapter II of the Constitution under which the environmental provision is housed seems problematic when viewed from the perspective of India's courts, which have been able to enforce the environmental provision in the Directive Principles of State Policy (Part IV), using the right to life provision. The environmental provision is to the effect that:

> The State shall endeavour to protect and improve the environment and safeguard the forests and wild life of the country.[81]

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[78] Anthony O Nwafor, 'Enforcing Fundamental Rights in Nigerian Courts – Processes and Challenges' (2009) 4 *AFr. J. Legal Stud.* pp. 1, 5 (quoting D.M. Jemibewon, *The Military, Law and Society: Reflections of a General* (1998) p. 109) in Stevens, above (note 66) at 16.

[79] (2002) 9 Sup. Ct. Monthly 1 (Nig. Sup. Ct.) [Ondo State]. The Supreme Court sought to determine the constitutional validity of the Corrupt Practices and Other Related Offences Act No. 5 of 2000 and its Independent Corrupt Practices and Other Related Offences Commission (ICPC). Both the Act and ICPC were established to enforce observance of the Directive Principle set out in section 15 (5) of the Constitution. The court held that the Act and the ICPC were constitution and valid. See Amechi, above (note 68) at 105.

[80] *A.G, Ondo State v A.G, Nigeria;* Amechi, above (note 68) at 105.

[81] Constitution of the Republic of India 1949, Art. 48A. Art. 51A also provides that 'it shall be the duty of every citizen of India, to protect and improve the natural environment including forests, lakes and wild life, and to have compassion for living creatures.'

While this provision is also non-justiciable, the Indian Supreme court has interpreted the right to life provision to include the right to a clean environment.[82] In *Damodhar Rao v The Special Officer, Municipal Corporation of Hyderabed,*[83] the court connected the environmental right to the right to life provision in Article 21. It commented that the 'slow poisoning… caused by environmental pollution and spoliation should also be treated as amounting to [a] violation of Article 21 of the Constitution.'[84]

India's Supreme Court's approach reflects a concerted effort to ensure that polluters are made responsible for environmental pollution, by using the right to life provision to give effect to the environment provision. The Indian court's approach provides scope for similar interpretation in Nigeria. Indeed, in the 2005 case of *Jonah Gbemre v Shell Petroleum Development Company & Other,*[85] it was argued that 'gas flaring and pollution… is an infringement to [a] right to a clean environment, which has grave effects on… health and life, [and is, therefore] an infringement to their right to life.'[86] Although the High Court agreed that gas flaring and environmental pollution constituted a violation of these rights – the right to life (including healthy environment) and the right to human dignity[87] – the case is still the subject of an appeal to the Court of Appeal.[88] Although the Court of Appeal, being a higher court of record, is likely to uphold

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[82] Article 21 of the Indian Constitution provides that 'no person shall be deprived of his life or personal liberty except according to procedures established by law.'

[83] AIR 1987 AP 171, 181. See also *Vellore Citizens Welfare Reform v. Union of India*, 1996 A I R (S.C.) 2715 (1996).

[84] Jona Razzaque *Public Interest Environmental Litigation in India, Pakistan, and Bangladesh* (2004) 95. See also M R Anderson 'Individual rights to environmental protection in India' in A E Boyle and M R Anderson (eds) *Human rights approaches to environmental protection* (1996) 214-216.

[85] Federal High Court, Benin, 14 November 2005, Unreported Suit No FHC/B/CS/53/05, *Gbemre v. Shell* (Judge C.V. Nwokorie). Full text of the judgment in this case available at *http://www.climatelaw.org/cases/country/nigeria/gasflares*, accessed on 12 August 2009.

[86] Ibid.

[87] The court issued an order restraining the respondents from further flaring of gas in the applicant's community.

[88] O Oluduro, above (note 63) at 265-266. It should be noted that Nigeria practices the adversarial system of justice and the hierarchy of court system is similar to that of South Africa.

the decision of the lower court because of the use of the right of life provisions to enforce an environmental right, this appears to be the only case on record in which litigants sought to apply the right to life provision under the Constitution to enforce an environmental provision. Nevertheless, critics view the provision of section 20 as the bane of the government's lacklustre attitude towards issues of environmental protection and management in Nigeria, and this has spilled over into its regulatory approach towards e-waste management.

5.3.2 Harmful Waste (Special Criminal Provisions) Act 1988

The Harmful Waste (Special Criminal Provisions) Act[89] was enacted in 1988 soon after the Koko Toxic Dump to deal specifically with the illegal dumping of hazardous wastes in Nigeria.[90] The Act seeks to prohibit the carrying, depositing and dumping of harmful waste on any land, territorial waters and matters relating thereto.[91]

It defines harmful waste as:

> any injurious, poisonous, toxic or noxious substance and, in particular, includes nuclear waste emitting any radioactive substance if the waste in in such quantity, whether with any other consignment of the same or of different substance as to subject any person to the risk of death, fatal injury or incurable impairment of physical and mental health; and the fact that the harmful waste is placed in a container shall not by itself be taken to exclude any risk which might be expected to arise from the harmful waste.[92]

Accordingly, section 1 of the Act provides that any person who:

a) carries, deposits, dumps or causes to be carried, deposited or dumped, or is in possession for the purpose of carrying, depositing or dumping, any harmful waste on any land or in any territorial waters or contiguous zone or Exclusive Economic Zone of Nigeria or its inland waterways; or

b) transports or causes to be transported or is in possession for the purpose of transporting any harmful waste; or

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[89] Cap H1, Laws of the Federation of Nigeria (LFN) 2010.

[90] Ogbodo, above (note 78) at 3.

[91] Full title of the Act.

[92] Section 15 of the Act.

c) imports or causes to be imported or negotiates for the purpose of importing harmful waste; or

d) sells, offers for sale, buys or otherwise deals in any harmful waste,

shall be guilty of a crime under the Act, with punishment ranging from a fine to restoration of the polluted environment, and life imprisonment.[93]

For the purposes of determining if any harmful waste has been transported, carried or stored for eventual sale or in relation to the commission of a crime under the Act, any police officer is empowered to conduct a search, without warrant, of any land, building or carrier, including an aircraft, vehicle, container or other place.[94] Such an officer is also empowered to perform tests, take samples of any such substances, or seize any such item or substances found on the appurtenances, if he or she has reason to believe it has been used in the commission of a crime under the Act.[95] Where necessary, such an officer may arrest any person believed to have committed a crime.[96]

The Act imposes strict liability on any person who causes damage by the depositing or dumping of harmful waste on any land, territorial waters, contagious zone, Exclusive Economic Zone of Nigeria or its inland waterways.[97] Such a person would be liable to persons who have suffered any injury as a result of such an offensive act.[98]

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[93] Section 6 of the Act.

[94] Section 10 (1) (a).

[95] A written receipt shall be also be given by the police office for any item, substance or thing seized. See Section 10 (1) (b) and (d) and (2).

[96] Section 10 (1) (c).

[97] The Act defines damage to include 'the death of, or injury to any person (including any diseases and any impairment of physical or mental condition). See section 12 (2).

[98] Miranda Amachree 'E-Waste Management in Nigeria' A Presentation at the International Workshop on Management of Waste Electrical and Electronic Equipment, Taipei, Taiwan, 15-20 October 2012 at 7, available at *http://www.epa.gov.tw/FileLink/FileHandler.ashx?file=16787*, accessed on 9 November 2014. See also section 12 of the Act.

Although the adoption of the Act displayed the government's commitment to discourage illegal dumping of hazardous wastes, particularly the imposition of life imprisonment and forfeiture of land for offenders, it fails to provide a definition of what constitutes dumping or a 'carrier or transporter' of harmful waste. Since its adoption in 1988, the government has appeared to be lax in its approach to hazardous waste management and the enforcement of the Act, even after its ratification of the Basel Convention in 1991. Despite the advent of the Bamako Convention in 1991 and Basel Ban Amendment of 1995, the government and relevant stakeholders in environmental protection and management were not motivated to push for an amendment to the Harmful Waste Act or to include appropriate definitions to guide the enforcement of its provisions until 2009.[99] The amendments do not propose to correct the anomalies in the Act, but are geared towards further clarification of e-waste definitions, as will be discussed below. Nonetheless, the Harmful Waste Act is the primary hazardous waste legislation in Nigeria. The power to enforce it is vested in the Federal Environmental Protection Agency (FEPA) as established by the Federal Environmental Protection Agency (FEPA) Act of 1998.

5.3.3 The Federal Environmental Protection Agency (FEPA) Act 1988

The FEPA Act is discussed in this part of the chapter only for historical relevance, to highlight the evolution of Nigeria's waste laws since the enactment of the Harmful Waste Act 1988.

FEPA was the second derivative of the Koko Toxic Dump incident. The agency was established under the FEPA Act of 1988. FEPA, before its repeal, was responsible for the protection and development of the environment in Nigeria, including initiation of policy relating to environmental research and technology, and providing advice to government on national environmental policies and priorities, and scientific and technological activities affecting the environment.[100]

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[99] In 2009, a Bill for an Act to Amend the Harmful Waste (Special Criminal Provisions, etc.) Act, Cap H1, LFN 2004 to provide for the Control of Electronic Devices and Prohibit Dumping and Burning of Electronic Waste and for Other Related Matters [SB 287) was passed.

[100] Section 4 of the FEPA Act 1988.

The FEPA Act criminalised the discharging of any hazardous substances into the air or on the land and waters of Nigeria. Upon conviction, an offender is liable to a N100,000 fine or 10 years' imprisonment, or both.[101] Section 20 (6) also provides that, notwithstanding the provisions of the FEPA Act, the Harmful Wastes Act shall apply in respect of any hazardous substance constituting waste as defined in section 15 above. This implies that in attempting to control the transportation of hazardous waste into Nigeria, the government envisioned that the provisions of the FEPA Act and the Harmful Waste Act should be read together, and that both pieces of legislation be enforced by the Agency.

Similar to the Harmful Waste Act, the FEPA Act failed to define e-waste, leaving the designation of e-waste to the Minister of Environment to publish by order in the Federal Gazette.[102] Although the problems associated with e-waste importation had not reached alarming heights at the time when both pieces of legislation were passed, they are clear attempts by Nigeria's government to safeguard and prevent a repeat of the Koko Incident. Unfortunately, the provisions of these laws were insufficient to control the continuous importation of e-waste into Nigeria, as will be shown subsequently.

While FEPA discharged its duties to administer and enforce environmental law and policy for 10 years, the Agency and other departments in other Ministries were merged to form the Federal Ministry of Environment in 1999, until the eventual repeal of the Act in 2007.[103] This merger was carried out without any appropriate enabling law on enforcement issues, as was done by the FEPA Act. This situation created a vacuum in the effective enforcement of environmental laws, standards and regulations in the country at the time,[104] and further facilitated opportunities for the e-waste shipment from developed countries into Nigeria, with the ports in Lagos State as viable conduits for such shipments.

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[101] Section 20 (1) (2).

[102] Section 38 of the FEPA Act.

[103] The FEPA Act was repealed in 2007 by the National Environmental Standards and Regulatory Enforcement Agency (NESREA) Act 2007.

[104] Oluduro, above (note 63) at 259.

5.3.3.1 Post-FEPA 1999 to 2007

The transboundary movement of e-waste by developed countries into Nigeria under the guise of 'charity' or 'donations' to Nigeria reached new heights in 1999, until the establishment of the National Environmental Standards and Regulations Enforcement Agency in 2007. This particular period is important for two reasons. First, FEPA had been subsumed into the Federal Ministry of Environment and thus, there was no designated environmental agency for the enforcement of the Harmful Waste Act to curtail e-waste importation into Nigeria. Second, such importation may have been driven by the realisation that Nigerians sought to be a part of the ICT trend involving increased use of computers to access the internet, and the use of large household appliances to alleviate daily activities. Accordingly, the demand for EEE increased in Nigeria, with the four second-hand EEE markets in Lagos providing ready avenues for the importation and generation of e-waste. However, with little or no information available to such consumers of new or used EEE, particularly the manner in which such equipment should be discarded at its EOL), the most readily available option is to dump non-functional EEE in open dumpsites or to incinerate them. Open dumping or incineration are readily available, as they are the quickest means of disposal in Nigeria, in the absence of any e-waste recycling facilities. As described in Chapter 1, there are serious environmental and health implications flowing from such unregulated disposal of unusable EEE.

Consequently, the lack of a formal, designated environmental agency in this period, in the absence of FEPA, to regulate the activities of these collectors, refurbishers and recyclers appears to have contributed to the thriving e-waste trade in Nigeria. With FEPA fully subsumed into the Federal Ministry of Environment, the Ministry was designated as the requisite body for the enforcement of the Harmful Waste Act in relation to e-waste importation and generation in Nigeria. The Ministry appeared to be ineffective in the exercise of such powers of enforcement. This led to unchecked increases in the activities carried out in these e-waste markets, fuelling the continued degradation of

human health and the environment. Hence, Nigeria's government sought to establish a prominent environmental agency to replace FEPA, and the National Environmental Standards and Regulations Enforcement Agency (NESREA) was established by virtue of the NESREA Act 2007. This Act repeals FEPA Act 1988.

5.3.4 The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act 2007

NESREA was established as an agency of the Federal Ministry of Environment.[105] The NESREA Act was assented to by the President in 2007 and repealed the FEPA Act.[106] It is regarded as 'a flagship of environmental law' and environmental matters in Nigeria.[107]

NESREA is empowered to enforce all environmental standards, regulations, rules, laws, policies and guidelines in Nigeria.[108] It is also empowered to 'enforce compliance with regulation on the importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste…'[109] Such enforcement also includes the development and review of new and existing national environmental laws and regulations, and all multilateral Environmental Agreements (MEAs) to which Nigeria is a treaty, including the Basel Convention.[110]

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[105] Oluduro, above (note 63) at 259.

[106] Section 36 of the NESREA Act.

[107] Ogbodo, above (note 77) at 12. See also S G Ogbodo *Handbook on the National Environmental Standards and Regulations Enforcement Agency Act (NESREA)* 2007 (2010), Nigeria at 3.

[108] Section 1 (2) (a) of the NESREA Act 2007.

[109] Section 7 (g).

[110] See *Abacha case* above on how international treaties become law in Nigeria. See also Miranda Amachree 'Update on E-Waste Management in Nigeria' A Presentation made at the 3rd Annual Meeting of the Global E-Waste Management Network ($GEM_{3)}$, San Francisco, U.S., 15-19 July 2013 at 4, available at *http://www2.epa.gov/sites/production/files/2014-05/documents/**nigeria**.pdf,* accessed on 9 November 2014.

5.3.4.1 The powers of NESREA

NESREA is headed by a Director-General who is the Chief Executive and Accounting Officer.[111] Its functions are geared towards, among others, promoting sustainable development, thus:

a. developing and maintaining strategies for effective environmental compliance monitoring and enforcement;

b. establishing a robust environmental information management system including a database/databank;

c. significantly increasing the environmental awareness level and creating partnerships with relevant stakeholders at both national and global levels;

d. carrying out effective compliance monitoring and enforcement programmes relating to biodiversity, ecosystems management, chemical management, etc. to ensure the sustainable use of Nigeria's natural resources, and to protect citizens' well-being and control air, land and water pollution; and

e. co-ordinating and promoting research and studies in collaboration with public and private agencies, institutions and organisations on various aspects of environmental degradation and pollution including technological transfer.[112]

The Agency's enforcement powers are broad and include the mandate to prohibit processes and use of equipment or technology that undermines environmental quality, conduct field follow-up compliance with set standards, and establish mobile courts to expeditiously dispense cases of violation of environmental regulations.[113] The Agency can be regarded as an environmental regulator, operator, capacity builder, job creator, environmental advisor,[114] and the body in charge of enforcement and compliance measures in environmental matters.

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[111] Section 11 (1) and (2) (a). There are five Departments in the Agency headed by a Director, namely Directorates of Administration and Finance; Planning and Policy Analysis; Inspection and Enforcement; Environmental Quality Control; and Legal Services. The headquarters of NESREA is located in Garki, Abuja, Nigeria. See ss 10 (1) and (2).

[112] NESREA Website 'What We Do,' available at *http://www.nesrea.gov.ng/activities/index.php,* accessed 01 August 2014. See also section 7 (a-l) of NESREA Act.

[113] Section 8 (a)-(s) of the Act.

[114] NESREA website, ibid.

NESREA's powers further extend to the submission of proposals for the development and review of existing guidelines, regulations and standards on the environment, other than the oil and gas sector,[115] for the approval of the Minister for the Environment.[116]

5.3.4.2 Hazardous substances

Like the repealed Harmful Waste Act and the repealed FEPA Act, the NESREA Act prohibits the discharge of any hazardous substance of such harmful quantities into the air, land or waters of Nigeria.[117] The penalty for violations is a N1m fine or five years' imprisonment, and in the case of a body corporate, a fine of N1m and an additional fine of N50,000 for every day the offence subsists.[118] Authorised officers, i.e. employees of NESREA, police officers not below the rank of Inspector of Police, or any customs officer are responsible for enforcement of criminal offences under the NESREA Act. [119]

The Minister for the Environment is empowered to make regulations prescribing the specific removal methods of such hazardous substance.[120] In addition, NESREA is mandated to co-operate with other government agencies for the removal of any pollutant discharged into Nigeria's environment, and shall enforce the application of best clean-up practices currently available and the implementation of best management practices as appropriate.[121] However, to date, no such regulations have been adopted by the Minister.

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[115] The Oil and Gas Sector is not regulated under the NESREA Act. It is proposed for regulation by the Petroleum Industry Bill 2010, which has not yet been passed into an Act.

[116] Ss 8 (k) and 34.

[117] Section 27 (1) of the NESREA Act.

[118] Section 27 (2)-(4).

[119] Section 37.

[120] Section 28.

[121] Section 29.

The precedence of the Harmful Waste Act 1988 over the NESREA Act 2007 is noteworthy. Section 27 (5) of the NESREA Act provides that, concerning the above section on hazardous substances, the provisions of the Harmful Waste Act shall supersede. This means that while the NESREA Act, like South Africa's National Environmental Management Act (NEMA) 1998, is the umbrella legislation for all environmental matters in Nigeria, the Harmful Waste Act is intended to regulate and control the transportation and dumping of hazardous e-waste into and within Nigeria. The proposed Harmful Waste (Special Criminal Provisions, etc.) (Amendment) Bill 2009, which seeks to amend the Harmful Waste Act 1988, contains interesting provisions. It seeks to prohibit the importation into Nigeria of electronic devices that have been used for more than five years outside Nigeria.[122] The Bill also seeks to mandate, on new EEE imported into Nigeria, performance standard labelling, radiation safety report to be submitted by importers or manufacturers, crossed-bin symbol differentiating EEE disposal from normal household waste for recycling purposes, and a prohibition on burning EOL EEE.[123] This Bill is yet to be passed into law, and as such, the 1988 Act remains the current legislation in place for hazardous e-waste dumping in Nigeria.

Notwithstanding, in a bid to bring e-waste specifically within the ambit of NESREA, in 2009, the Minister for the Environment established 12 regulations under NESREA for effective and sustainable management of all sectors of the environment in Nigeria, including the National Environmental (Sanitation and Wastes Control) Regulations of 2009.[124]

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[122] Section 2(2) (ii) of the Harmful Waste (Special Criminal Provisions, etc.) (Amendment) Bill, 2009.

[123] Section 3 of the Bill.

[124] GN. No. 282, 7 October 2009, B1105 -1119. The other 11 regulations are: National Environmental (Chemical, Pharmaceutical, Soap and Detergent Manufacturing Industries) Regulations 2009, Government Notice No. 68, 20 October 2009, B1319 -1363; National Environmental (Noise Standards and Control) Regulations 2009, Government Notice Np. 228, 19 October 2009, B1299 -1318; National Environmental (Textile, Wearing Apparel, Leather and Footwear Industry) Regulations 2009, Government Notice No. 287, 16 October 2009, B1251 -1296; National Environmental (Food Beverages and Tobacco Sector) Regulations, GN No. 286, B1211 – 1248, 14th October 2009; National Environmental (Ozone Layer Protection) Regulations, GN Notice No. 285, 13 October 2009, B1187 -1209; National Environmental (Mining and Processing of Coal, Ores and Industrial Minerals) Regulations, GN No. 284, 12 October 2009, B1147 -1185; National Environmental (Access to Genetic Resources and Benefit Sharing) Regulations, GN No.

5.3.5 The National Environmental (Sanitation and Wastes Control) Regulations 2009

The Sanitation and Waste Control Regulations were adopted to ensure sustainable and environment-friendly practices in environmental sanitation and waste management to minimise pollution.[125] It is also the second waste-related legislation in Nigeria to promote and recognise the need for sustainable environmental friendly practices in e-waste management.

5.3.5.1 Definitions

The regulations define sustainable environment friendly practices as 'a waste management "method" that takes all practical steps to ensure that waste is managed in a manner that will protect human health and the environment against the adverse effects which may result from the waste with optimum utilization of resources.'[126] A generator of waste is also defined as 'a person, group of persons, body corporate or incorporate whose endeavour, practice, vocations and engagements occasion the production of waste.[127]' Bringing e-waste under the ambit of the regulations, it defines *EOL waste* as 'a post-consumer waste of products, appliances, equipment, machinery that may have physical integrity but have lost its utility value (e.g. tyres, vehicles, TVs, cookers, refrigerators, mobile phones, etc.) which the owner has discarded, intends to discard or is required to discard).'[128]

283; 9 October 2009, B1121 – 1144; National Environmental (Permitting and Licensing System) Regulations, GN. No. 282, 7 October 2009, B1105 -1119; National Environmental (Sanitation and Wastes Control) Regulations, GN No. 281, 6 October 2009, B1057 – 1102; National Environmental (Watershed, Mountainous, Hilly and Catchment Areas) Regulations, GN. No. 280, 5 October 2009, B1043 – 1055; National Environmental (Wetlands, River Banks and Lake Shores) Regulations, GN No. 279, 2 October 2009, B1021 – 1040 and National Environmental (Base Metals, Iron and Steel Manufacturing/Recycling Industries Sector) Regulations, GN No. 127, 4 May 2011.

[125] Section 2 of the Sanitation and Waste Control Regulations 2009.

[126] Section 106 of the Regulations.

[127] Ibid.

[128] Ibid.

The regulations also incorporate the EPR principle, stating that manufacturers and producers shall incorporate environmental concerns in the design, process and disposal of a product.[129] The regulations do not provide any further explanation of what environmental concerns entail, and implies that NESREA is to know what this entails. It can be assumed that it alludes to the physical/environmental responsibility under the EPR matrix set out in Chapter 2, which requires producers to adopt an eco-design approach to EEE production in order to minimise further environmental impacts arising from the product.[130] While the Regulations do not define who a *producer*, *importer* or *manufacturer* is in this context, the definition of a *generator* above to include a practice or endeavour which 'occasion(s) the *production*[131] of waste[132] incorporates a 'producer' of EEE and attendant waste arising from the use of such new or used EEE. The Regulations also incorporates the polluter-pays principle, an integral part of the EPR principle by providing that 'all generators of wastes… shall be legally and financially responsible for the safe and environmentally sound disposal of their wastes.[133] The regulations also emphasise that all generators and managers of waste shall apply sustainable practices to minimise pollution.[134] These provisions – which incorporate financial and legal liability, including the application of sustainable practices – are typical of the responsibilities required of a producer under the EPR matrix. While it does not clearly set out the extent of such 'legal liability' or the exact nature of such financial responsibility, it is assumed that such legal liability for the environmentally sound disposal is inclusive of hazardous waste collection and disposal liabilities, as noted in Chapter 2. The ensuing paragraphs envisage the assumption of such financial liability.

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[129] Section 16 of the Regulations.

[130] As described in Chapter 2.

[131] Emphasis mine.

[132] Section 106.

[133] Section 14 of the Regulations.

[134] See definition in section 15 above.

5.3.5.2 Application to e-waste management

The regulations prohibit engagement in any activity likely to generate hazardous waste without a licence from NESREA.[135] Thus, no person shall export or transit hazardous waste, including EOL household electrical and electronic appliances or residues, without a permit from NESREA.[136] In line with the requirement of PIC under the Basel Convention, the regulations prohibit the transit of toxic or hazardous waste destined for another country through the territory of Nigeria without a valid PIC for such movement issued by NESREA.[137] Any person who fails to comply with the above obligations shall be guilty of an offence punishable with a fine of N5m (R150,000) or imprisonment for five years, or both.[138]

In line with the EPR approach, the regulations also mandate all manufacturers and importers of e-waste to register with NESREA, to undertake buy-backs for recycling and to embark on individual or collective Product Stewardship Programme (PSP) contained in its Schedule IX.[139] This Schedule sets out guidelines for an EPR programme, directing manufacturers and importers of e-waste to either individually or collectively submit a PSP to NESREA for approval. This PSP appears to be similar to the South African Waste Act 2008's requirement of an IWMP. The PSP shall:

a. establish a process for the collection, handling, transportation and final treatment of post-consumer products regardless of who the original brand owner of the products or the consumer is;
b. employ various types of processes to reduce, re-use, recycle or recover post-consumer products, including but not limited to details of efforts to incorporate the

[135] NESREA is empowered to grant such licenses to persons qualified to operate a waste management facility, and shall have the power to revoke such license as contained in the National Environmental (Licensing and Permitting Systems) Regulations 2009.

[136] Section 49 of the Regulations. See also Schedule XIII (c) of the Regulations.

[137] Section 51.

[138] Amachree, above (note 110) at 10.

[139] Section 32.

> priorities of a pollution prevention hierarchy by moving progressively from disposal to reduction, re-use, recycling and recovery of post-consumer products.[140]

A report on their consumer PSP for e-waste must be submitted to NESREA on or before June 30 every year, including the total amount of consumer products sold and post-consumer waste collected, processed or stored; the percentage of treated, contained, re-used, recycled or recovered post-consumer waste, and efforts taken through consumer product marketing strategies to reduce post-consumer waste; and any other information requested by NESREA.[141]

The regulations provide that 'failure to participate shall attract penalties.'[142] This provision appears vague, as it is not clear if the intention of the drafters was to penalise non-participation of the manufacturers and importers of e-waste in an individual or collective PSP, or if the penalty is meant for non-inclusion of the appropriate information required in the annual PSP report.

It is important to reflect on this part of the Sanitation and Waste Regulations and what it presages for EPR implementation in the Nigerian context. The requirement above that manufacturers undertake buy-backs for recycling is indicative of a pure EPR approach (discussed in Chapter 2). However, the inclusion of *manufacturers* is not practicable under the Schedule, since the key actor in new/used EEE or e-waste importation in Nigeria are the *importers*. The above provisions are assumed to apply to *importers*.

Schedule VIII lists e-waste as one of the materials amenable to an EPR programme with effect from 31 January 2011. Since Schedule IX is entitled Guidelines for an EPR Programme, it can be assumed that the express requirement under the Schedule that manufacturers and importers of e-waste should individually or collectively submit a PSP to NESREA for approval is indicative of the recognition that product stewardship is an

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[140] Section 3 (a) *(i)* and *(ii),* of Schedule IX.

[141] Ibid at Schedule IX.

[142] Section 3 (d) of Schedule IX.

extension of the EPR principle and must be applied in order to allocate appropriate responsibilities to the actors in the EEE chain in Nigeria. However, Schedule IX is specific to manufacturers and importers, and does not elaborate on the extension of such PS to encompass consumers or recyclers. It can be assumed that such PSP programme may include the extent of the responsibility of such consumers, recyclers, manufacturers and importers. It could also be that the PSP, which anticipates the establishment of a *process* for the processing, collection, handling, transportation or final treatment of e-waste, is inclusive of a financial/economic mechanism of the EPR matrix that will guide the process.

Hence, the Sanitation and Wastes Regulations are indicative of governmental efforts in putting forward regulations that adopt the EPR principle and elements of the EPR matrix to e-waste management in Nigeria. Unfortunately, it is riddled with loopholes that should have been avoided in its drafting. First, it refers to 'sustainable environmentally friendly practices' as a 'sustainable management method' without providing a definition of what constitutes sustainable management or sustainable development. This phrasing is particularly important because, as emphasised in Chapter 2, e-waste must be managed sustainably, i.e. must take cognisance of the environmental, social and economic implications, and one of the tools through which this can be achieved is with the EPR approach. Second, while the regulations are laudable in their inclusion of buy-backs for recycling and a collective PSP, NESREA is yet to publish any information relating to the adoption of such a programme under the regulations and the Act, or allude to any annual reports on consumer e-waste submitted by any importer. It can be implied from this that, while there is scope for implementation of the EPR/PS programme to e-waste in Nigeria, manufacturers and importers appear not to be interested in collectively or individually submitting any such programmes. Third, the regulations appear to thrive on the imposition of fines and/or terms of imprisonment for violators with no clear direction as to who shall enforce same in the event that a person is found transiting hazardous waste through Nigeria without a valid PIC permit issued by NESREA.[143] This

[143] Regulation 51 of the Sanitation and Waste Regulations 2009.

particular provision stands out owing to its implications for e-waste management. It is also important when read in conjunction with section 8 (f) of the NESREA Act, which requires the Agency to establish mobile courts to expeditiously dispense cases of violation of environmental regulations. Although this section is subject to the provisions of the 1999 Constitution and in collaboration with the relevant judicial authorities, the Agency is yet to set up any such mobile courts to try offenders found guilty of transiting e-waste within Nigeria for export.

It can therefore be implied that the provisions of the regulations appear to be geared towards minimising the generation and ineffective disposal of waste rather than specifically controlling the importation or overall trade in e-waste. This regulation is not enough to deter importers from sending truckloads of used EEE to Nigerian ports, in view of the thriving market that exists in this jurisdiction. The regulations aptly considered and included the application of the EPR principle to e-waste management, but implementation of the same through the PSP by manufacturers and importers remain problematic. While it was noted above that the duty on importers under the PSP requires the establishment of a process for e-waste recycling, the delineation of the financial/economic instruments by way of import levies, deposit refund systems or ARF of stakeholders as envisaged by the EPR matrix must be integrated in such a proposed collection system. Therefore, the failure of such importers in Nigeria to submit such a PSP constitutes a huge space in the arena of e-waste management in this jurisdiction.

In view of the above, and in accordance with its mandate under the NESREA Act, NESREA began to put in place appropriate modalities for the adoption of additional regulations to ensure effective environmental governance through compliance monitoring and enforcement for e-waste management.[144] In 2011, an additional e-waste specific regulation referred to as the National Environmental (Electrical/Electronics Sector) Regulations was adopted in accordance with section 34 of the NESREA Act.

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[144] 'e-Waste concerns re-echoes at clean environment forum,' available at *http://www.vanguardngr.com/2010/08/e-waste-concerns-re-echoes-at-clean-environment-forum/*, accessed on 18 November 2014.

5.3.6 The National Environmental (Electrical/Electronics Sector) Regulations 2011

The National Environmental (Electrical/Electronics Sector) Regulations (EES Regulations) were published in 2011.[145] They seek to 'prevent and minimize pollution from all operations and ancillary activities of the Electrical/Electronic Sector to the Nigerian environment.'[146] It is based on the life-cycle approach, covering all aspects of the electrical/electronic sector from cradle to grave.[147] The 5Rs (reduce, repair, re-use, recycle and recover) form the main principles of the EES Regulations and are the 'primary drivers of the sector.'[148] These principles encompass all the categories and EEE lists specified in Schedule I of the Regulations.[149]

5.3.6.1 Definitions

The EES Regulations cover both new and used EEE/UEEE.[150] In view of the fact that majority of the EEE imports entering the country are unusable and non-functional, the EES Regulations specifically provides that 'all new EEE imported into the country shall be functional…'[151] The implications of this under the regulations are that non-functional

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[145] S. I. No. 23 in *Government Gazette* Notice No. 137, 25 May 2011.

[146] Regulation 2 (1) of the EES Regulations.

[147] The Electrical Electronic sector refers to an 'organisation or body corporate involved in (a) manufacturing, assembling, processing or recycling any equipment contained in the categories of EEE listed in these Regulations; and (b) operations in Telecommunication, broadcasting, power (distribution, transmission and generation) facilities.' See Regulation 69; Regulation 2 (2).

[148] Regulation 2 (3).

[149] Schedule I sets out the categories of EEE covered by the EES regulations and include: 1) large household appliances such as washing machines, refrigerators, freezers and microwave ovens; 2) small household appliances (white goods) such as vacuum cleaners, toasters, fryers, etc.; 3) ICT and telecommunications equipment (green goods) such as personal/laptop computers, electrical and electronic typewriters, mainframes, centralised data processing, telephones, etc.; 4) Entertainment and consumer equipment (brown goods) such as radio sets, television sets, video cameras and recorders, etc.; 5) Lighting equipment such as luminaries for fluorescent lamps with the exception of luminaries in households, straight fluorescent lamps, low pressure sodium lamps, etc.; 5) Electrical and electronic tools (with the exception of large-scale stationary industrial tools) such as drills, saws, sewing machines, etc.; 7) Toys, Leisure and sports equipment such as electric trains and car-racing sets, video games, etc.; 8) Medical devices (with the exception of implanted or infected products) such as radiotherapy equipment, cardiology equipment, etc. 9) Monitoring and control instruments such as smoke detectors, thermostats, etc.; 10) Automatic dispensers such as automatic dispensers for hot drinks, hot or cold bottles or cans, for solid products, for money, etc.

[150] Regulation 3 (1).

[151] Regulation 69.

EEE shall be classified as e-waste or WEEE, the importation or exportation of which are expressly prohibited.

To facilitate proper application of the EES Regulations to the Electrical/Electronics sector, certain definitions are provided in regulation 69. Cognisant of the fact that there is a variety of both new and used EEE entering into the country, the EES Regulations clearly distinguishes between e-waste and used EEE. *E-waste* is defined under the Regulations as 'Waste Electrical Electronic Equipment (WEEE) including old, end-of-life (EOL) or discarded electrical/electronic appliances using electricity.' Used EEE means 'second-hand EEE that are functional and meant for reuse.'[152] Perhaps, this definition of used EEE is meant to deter waste brokers or importers from importing e-waste in shipments containing EEE for re-use. NESREA is empowered to apply the provisions of this section when inspecting any shipment of EEE entering the country.

A legal definition of *producer* as differentiated from an *importer* is imperative in Nigeria, where the importation of EEE thrives. However, making such a distinction may be problematic, particularly in view of the fact that the producer of EEE is not the same as an importer or distributor of UEEE in Nigeria. As stated in Chapter 2, a *producer* is defined as a person or group of persons on whom responsibility for an electronic product rests. Such responsibility entails the creation, construction, packaging, labelling (where necessary, importation), marketing and sale of particular EEE to retailers and or consumers. The *importer*, on the other hand, refers to a *trader* – a person or group of persons who arranges for the shipment of new or used EEE via container by sea from a developed to a developing country.

Conversely, the EES Regulations define a *producer* as someone who 'manufactures *in or outside*[153] electrical and electronic equipment for the Nigerian market' and an *importer* as 'a person or body corporate who, in the ordinary course of conduct of

[152] Ibid.

[153] Emphasis mine.

a trade, occupation or profession, imports (brings into the country) EEE.'[154] The EES definition appears to be vague, since the words 'in or outside' are confusing. It is unclear whether the definition should be read to mean 'someone who manufactures EEE inside or outside Nigeria for the Nigerian market.' Also, the definition of an importer who brings EEE into the country 'in the ordinary conduct of a trade, occupation or profession' appears to be too open-ended and leaves room for the possibility that such an importer could either include a private person who buys and imports new and/or used EEE for his own use, or a person who imports large quantities of new or used EEE, the quantity of which may require a valid permit from NESREA to do so. This latter category of person may also hide under the umbrella provision of 'ordinary course of a trade' and import waste EEE into the country along with the new and used EEE. Notwithstanding, it is important that the Act defines an importer, recognising such an entity as a key actor in the used EEE and e-waste trade in Nigeria.

Perhaps to highlight the existence of the thriving informal market for used EEE recycling in Nigeria, the EES Regulations distinguishes between an *assembler* and a s*cavenger*. An *assembler* refers to a 'person or group of persons who bring, fix together separate parts of Electrical Electronic Equipment,' while a 'scavenger' means a person who searchers and picks waste that can be useful for recycling purposes by people that will convert them to other useful forms.[155] Further important definitions include:

- *recovery* means any operation(s) leading to the creation of value of material;
- *recycling* means the processing in a production process of the waste materials for the original purpose or for other purposes[156]
- *re-use* means any operation by which e-waste/WEEE or components thereof are used for the same purpose for which they were conceived, including the continued use of the equipment or components thereof which are returned to collection

[154] Note that this definition of an importer is different from that of a distributor, i.e. any person who provides electrical or electronic equipment on a commercial basis to the party who is going to use it.

[155] Regulation 69.

[156] This definition excludes energy recovery, which refers to the use of combustible waste as a means to generate energy through direct incineration with or without other waste but with recovery of the heat, and *recycled* and *recycling operation* shall be construed accordingly.

points, distributors, recyclers or manufacturers and 're-used' shall be construed accordingly.

- *environmentally sound manner (ESM)* means 'best management practices for electronic recyclers that can be used in conjunction with recycling. Industry operating standards to ensure compliance with all applicable regulations and ensure environmental and worker protection.'

These definitions are highlighted here to underscore the fact that the EES Regulations provide explanations as to what the e-waste recycling processes entail. For instance, it defines recycling as 'processing in a production process.' The practicability of this is highlighted in Chapter 4 by a descriptive analysis of the processing done by Company A and Company B. It will be shown below that there is currently no valid, registered e-waste company in Nigeria involved in the recycling of same. There also appears to be a gap between the definition of *recycling* provided in the EES Regulations and the reality of its operation in practice. The practice of recycling currently being carried out in the four EEE markets in Lagos, Nigeria involve the breaking up and dismantling of used EEE by hand, rather than through mechanical processes or environmentally sound processes. Additionally, the definition of *re-use* also entails a regulated context in which returning e-waste/WEEE are returned to collection points, distributors, recyclers or manufacturers, rather than the informal context of refurbishing by hand or crude burning of e-waste practised by unregistered recyclers/dismantlers/refurbishers or scavengers. The following paragraphs examine the reality of the *re-use* element, and the extent of compliance by NESREA and informal market operators to the requirement of environmentally sound management.

5.3.6.2 The disposal of e-waste

The EES Regulations prohibit the discarding, throwing or dropping of e-waste by a body corporate or organisation, technician, assemblers or scavengers and direct such person to practise the ESM of e-waste. Thus, the burning of e-waste, disposal of e-waste alongside domestic and/or municipal waste; disposal of e-waste at dumpsites, landfill sites, water bodies, etc.; breaking CRTs in an unsound environmental manner; releasing

chlorofluorocarbons (CFCs) from fridges and other cooling systems; and leaching of precious metals with acids and other hazardous waste from PWBs or PCBs is prohibited.[157]

Virtually all electronic devices contain PCBs, which are platforms on which integrated circuits and other electronic devices and connections are installed.[158] They contain 40% metals, 30% of organics and 30% ceramics, and their disposal in landfills are no longer accepted in developed countries owing environmental impacts and losses of resources.[159] As stated in Chapter 4, Respondent 5 (Company A) noted that South African recyclers typically export PC board to Swedish refineries due to its hazardous nature for further dismantling for re-use or reclamation of other components.[160] It is unsurprising, then, that the EES Regulations expressly prohibit the leaching of metals with acid from such PCBs, as the drafters must have been cognisant of the environmental and health impacts which may result from the acid contained in the PCB, and Nigeria's lack of capacity to dispose of same in landfills or export it. There is also no legislation regulating precious metals in Nigeria to control the extraction of same during informal e-waste recycling, and which supports this provision of the EES Regulations, unlike the South African Precious Metals Act which is discussed in the previous chapter. However, the EES Regulations contain no other provisions relating to the collection and management of precious metals in Nigeria. This is a major loophole in the legislation.

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[157] Reg. 36 (2) *(a)-(e).*

[158] Waldir A Bizzo *et al.,* 'Characterization of Printed Circuit Boards for Metal and Energy Recovery after Milling and Mechanical Separation' (2014) *Materials* at 4556, available at *http://www.mdpi.com/1996-1944/7/6/4555/pdf,* accessed 13 February 2014. See also Maria Paola Luda 'Recycling of Printed Circuit Boards' pp. 285-298 at 285, available at *http://cdn.intechopen.com/.../InTech-Recycling_of_printed_circuit_boards.pdf,* accessed 13 February 2014.

[159] Luda, above (note 159) at 285, 287.

[160] Ibid at 287.

5.3.6.3 Permit/Licensing system

The activities that require a permit under the EES Regulation include: the exporting or transit of e-waste[161] and the importing of used EEE.[162] A body corporate or organisation is prohibited, without a permit, from discharging any effluent or hazardous or toxic substances into the water, air or land of Nigeria's ecosystem beyond permissible limits set out in the regulations.[163] Therefore, any such organisation that pollutes the waterways, air or land shall be subject to the application of the PPP and shall be responsible for the cost of damage assessment, control and clean-up, remediation, reclamation and/or restoration.[164] The Act is silent regarding prohibition on 'any person/persons' in this regard. This omission is noteworthy as the Act appears not to have considered the possibility of person or persons involved in the export, transit or importation of waste. In reality, most e-waste imports into Nigeria are carried out by a person or persons, rather than organisations.

5.3.6.4 Cleaner production processes

The EES Regulations also include the need for implementation of cleaner production processes and pollution prevention measures to yield economic, social and environmental benefits as specified in Schedule V to the regulations.[165] Such a requirement under the Act is reflective of the physical/environmental responsibility of a producer/importer under the

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[161] Such exporting cannot be carried out without a valid transboundary and movement permit issued from the Federal Ministry of Environment. Such a permit also relates to the specific export transaction and shall not be valid for any subsequent export transaction. See Regulation 41 (1) and (2).

[162] The type of EEE permits that can be applied for under the EES Regulations include used EEE import permit; used EEE export permit; e-waste collection centre permit; e-waste recycling permit; e-waste recycling permit; EEE installation/operation permit; and industrial/commercial discharge permit. See Schedule XVII. It also appears that applications for permits under the Act should follow the general provisions for permitting and licensing under the National Environmental (Permitting and Licensing System) Regulations 2009.

[163] Such limits are specified in Schedules IX and X of the Regulations. Additionally, all permits (notices, orders, consent or demand) shall be in writing and as set out in the National Environmental (Permitting and Licensing Systems) Regulations 2009. See Reg. 12 (1) and (2).

[164] Reg. 7 (1)-(3).

[165] Reg. 8 (1). Such cleaner production processes include the application of best environmental practices in the achievement of same. See Schedule III of the EES Regulations.

EPR matrix. The Regulations requires all EEE manufacturing, processing, assembling organisation or corporate body to apply new technologies arising from the elimination of hazardous material in many new-model EEE.[166] The inclusion of this requirement in the regulations is indicative of the government's need to apply a sustainable approach to environmental management of e-waste in Nigeria. Unfortunately, Schedule V to the EES Regulations, which seeks to guide the implementation of such sustainable cleaner production methods of EEE, has not yet been drafted. There is no existing legislation relating to hazardous substances or policy document in place that sets out requirements for classification and disposal of hazardous e-waste in Nigeria. There is also no existing equivalent of a RoHs Directive on the use of certain hazardous substances in EEE in West Africa that Nigeria can rely on. In addition, the requirement for the adoption of cleaner production processes is not addressed to a specific person, body corporate or organisation. Therefore, it may be assumed that the combined effect of regulations 8 (1) and (2) appear to be addressed towards the foreign manufacturers of EEE who import 'new-model EEE products' into the country through a retail outlet/distributor. However, it is unclear how these provisions are to be enforced against such foreign manufacturing companies.

Concerning the local EEE manufacturing, processing, assembling organisation or body corporate in Nigeria, 'pollution prevention measures shall focus on minimization of the use of hazardous substances…'[167] This section is to be adhered to by local manufacturers/assemblers of EEE components in Nigeria.[168] This may be read in conjunction with Regulation 8 (1) somewhat by setting out 'best practices' requiring among others, all body corporate or organisations to adopt in-plant waste and energy reduction and pollution prevention strategies. The EES Regulations also require such organisations to establish new EEE facilities, creating a buffer zone between them and nearest human settlements, in accordance with a planning permit. To ensure that emissions

[166] Reg. 8(2).

[167] Reg. 8 (3).

[168] Such local assemblers include Omatek Computers Limited, Zinox Technologies Limited, Brian Integrated Systems Limited, Beta Computers and Adebowale Electronics.

from such EEE facilities are not harmful to humans or the environment, Schedule X sets out effluent limitations for electronics manufacturing, assembly and processing companies.[169] Although these provisions relating to effluent limitations are apt, the requirement that all corporate organisations, including local EEE manufacturers/assemblers, are to adopt and utilise in-plant waste and energy reduction and pollution prevention strategies is more practicable for the local EEE manufacturers/assemblies and not foreign EEE manufacturing companies outside Nigeria. Such local companies would be better off importing EEE components from developed countries that have applied such new technologies that eliminate hazardous substances for use and assembly in Nigeria.

5.3.6.5 Importation of EEE

The EES Regulations provide that all new EEE imported into the country shall be functional and shall have the manufacture date inscribed on them and the warranty indicated.[170] Pin and serial numbers must also be inscribed on all EEE imported into the country or assembled therein.[171] Where a body corporate or organisation intends to import new EEE into the country, it must register with NESREA.[172] Although the Act does not provide a reason for this, it is assumed that the purpose of this requirement is to determine the authenticity of such a registered company under the Companies and Allied Matters Act,[173] and whether such a company falls within the ambit of an *importer* as defined by the EES Regulations. Consequently, every producer or importer of EEE is required to keep records and furnish the Agency with a written quantity of all EEE which has been imported in the preceding year into the country by 31 March every year.[174]

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[169] Reg. 12 (2) (b), 15 (1) and (2) (a0 (b) (3), 16 (1) and (2), 17 (d) and 18 (3). Schedule XI which sets air emission levels for such companies. See Regulations 19, 20(1) and 22 (1).

[170] Reg. 3 (1).

[171] Reg. 3(2).

[172] Reg. 3(2).

[173] Cap C20, Laws of the Federation of Nigeria 2010.

[174] Reg. 40 (1).

The EES Regulations expressly prohibit the importation of EOL, unusable or unserviceable EEE into Nigeria, and clearly bans the importation of CRTs into the country.[175] Such actions constitute an offence under the regulations and upon conviction, a culprit is liable to a fine not exceeding N500,000 (R30,000) or two years' imprisonment, or both. In the case of importation of CRTs, a fine not exceeding N200,000 (R13,000) or six months' imprisonment, or both such fine and imprisonment, and an additional fine of N5,000 for every day the offence subsists.[176] This ban appears to acknowledge the fact that Nigeria's government lacks the capacity to handle disposal of CRTs in registered landfill sites, in contrast to what is being done by voluntary e-waste recycling companies in South Africa.[177]

The regulations also provide clear requirements for the importation of used EEE. Such importation is invalid except if it complies with the provisions specified in Schedule II, and shall be of comparative model of equipment; fit for purpose; functional and not scrap; such that the outward/external appearance of the item does not show any waste characteristics; and properly packaged for protection during transport, loading and unloading.[178] In line with this, Schedule II sets out a Guide for Importers of Used EEE into Nigeria, to assist importers (including private persons, companies, organisations and shipping companies) to distinguish between UEEE and WEEE.[179] It must be noted here that under Nigerian law, guidelines are regarded as having legal effect. The case of *Nguroje & Anor v. El-Sudi & Ors*[180], while deciding on the interpretation of a section of

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[175] Reg. 34 (2) and (3). CRTs are described by Respondent 5 in Chapter 4 as a 'problematic fraction.' They cannot be classified as hazardous as such because they are encapsulated in glass.' He confirms that Company A is in discussions with the DEA to get the CRTs re-classified. Technology for recycling of CRTs is very costly, in the average of about R50m (N810m). See Record of interview with Company A personnel in Chapter 4.

[176] Reg. 61 (1) (a) and (c) and Reg. 67 (1) and (2).

[177] See Chapter 4.

[178] Reg. 3 (4).

[179] 1.4 of the Guidance Document in Schedule II of the EES Regulations.

[180] (*2012) LPELR-20805 (CA)* at 130.

the Electoral Guidelines of Primary Election 2010, confirms this. Ignatius Igwe Agube, Justice of the Court of Appeal (JCA), in his lead judgment, notes that:

> 'the Guidelines… were drawn up to conform strictly with… the Electoral Act and the Constitution of the Federal Republic of Nigeria 1999… However, for an aspirant to be bound by the doctrine of party supremacy, such election must be conducted in strict accord with… the Guidelines, and indeed the Constitution of the Federal Republic of Nigeria and regulated by the Electoral Act.[181]

He further states:

> the court is duty bound to enforce the provisions of the party's constitution and Guidelines on party supremacy only to the extent that they do not conflict with statutory provisions… and the Grund Norm of this Nation which is the Constitution of the Federal Republic of Nigeria. In [this] case, the constitution and Guidelines… were made… and they are bound to be obeyed in the conduct of… [the] affairs of the party.

Also, in the case of *Damien Abdul Adejoh v Hon. Gabriel Yunisa Olofu & Ors*,[182] the court relied on section 153 of the Electoral Act,[183] which states that: 'the Electoral Commission may subject to the provisions of the Act, issue regulations, *guidelines*,[184] or manuals for the purpose of giving effect to the provisions of the Act and for its administration thereof.' The court held, per Joseph Tine Tur, JCA, that registered political parties are bound by regulations, *guidelines,*[185] or manuals issued by the Commission, subject to the provisions of the Electoral Act 2010. The effect of these decisions is that importers of UEEE are bound by the Guide for Importers of Used EEE into Nigeria, subject to the provisions of the EES Regulations and NESREA Act.

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[181] See pp. 6 and 7.

[182] (*2014) LPELR-22347 (CA)* Abuja Judicial Division, para. B. and E, at 36.

[183] No. 6 of 2010, Cap E6, Laws of the Federation of Nigeria (LFN) 2010.

[184] Emphasis mine.

[185] Emphasis mine.

The Guide is based on certain guiding principles, including the Harmful Waste Act, the requirement that exporting countries are expected to enforce their national laws and relevant regional and international conventions on transboundary movement of hazardous waste, and the requirement that every importer of UEEE should register with NESREA.[186] Thus, the Schedule reiterates the following:

a. any WEEE imported into Nigeria shall be sent back to the Port of origin;
b. any vessel used to import UEEE mixed with WEEE shall be forfeited to Nigeria's government;
c. administrative punitive fines shall be imposed on the carrier of WEEE or UEEE mixed with WEEE;
d. all UEEE imported into Nigeria shall comply with the requirements set out in Regulation 3 (4) above, and NESREA shall only give clearance after satisfactory inspection of every suspected consignment before such consignment is discharged at port;
e. all importers are to bear the cost of inspection, testing and ESM of every consignment as prescribed by NESREA, or all importers of new and/or used EEE will pay an administrative cost to NESREA to promote the ESM of WEEE.[187]

The wording of this part of the Guide appears to have considered and adopted the requirements for used EEE importation set out under the Basel Technical Guidelines (see Chapter 3). The Guide also requires that all UEEE imported into Nigeria must meet specific requirements, such as requisite documentation to show the sale and/or transfer of ownership of the UEEE stating that the equipment is for direct re-use and fully functional; a certificate showing that such UEEE has been tested and is functional; a declaration by the holder/transporter of UEEE that none of the equipment is waste;[188] and evidence of

[186] Para 2.0 *(a) (b)* and *(e)* of Schedule II.

[187] 2.0 of Schedule II.

[188] UEEE would normally be considered waste if: a) the product is not complete and some essential parts are missing; b) functionality or safety is impaired; (c) the appearance is generally worn or damaged; (d) the packaging is insufficient; (e) the item has among its constituent part(s) anything that is required to be discarded including refrigerators or air conditioners containing ozone-depleting substances (ODS); (f) it is destined for disposal or recycling instead of re-use; and (g) it is old, outdated or destined to be cannibalised to gain spare parts. See 4.0 of Schedule II.

proper packaging to avoid damage during transportation, loading and unloading.[189] The importer or his or her representative must also provide information to NESREA and the NCS showing that he or she is has complied with this document. Failure to comply indicates that the material is WEEE, and a precautionary approach for environmental protection shall be taken.[190]

Additionally, the Guide requires that every carrier (e.g. shipping container, lorry, truck) of UEEE must be accompanied by: (a) Cargo Movement Requirement (CMR) document; (b) proof of evaluation/testing and certificate containing testing information on each item; (c) declaration of the liability by the importer; and (d) a copy of permit to import.

Certain questions arise from the above provisions. *What exactly does the requirement of administrative costs to be paid by importers for the ESM of EEE envisage? Do such administrative costs allude to the economic/financial responsibility under the EPR matrix to be utilised towards establishment of collection centres for ESM of e-waste in Nigeria? Will the importers solely bear the cost of ESM, or should consumers, recyclers and government share in such responsibility, thus cementing the PS approach in the application of the EPR principle? Will such an administrative cost geared towards the promotion of an ESM on WEEE be applied to convening seminars, workshops and awareness media regarding best available technology to be utilised or health and safety requirements to ensure protection of recyclers, refurbishers and dismantlers? In view of the fact that corruption permeates almost every sector of Nigerian society,[191] what indices should be used to ensure that such importers or their representatives do not circumvent*

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[189] 3.0 (a); ibid.

[190] 3.0 (b); ibid.

[191] In December 2014, Transparency International, a global coalition against corruption, ranked Nigeria the 136th most corrupt country in the world and the third most corrupt country in West Africa after Guinea and Guinea Bissau. See Transparency International Website – *http://www.transparency.org/country#NGA_DataResearch,* accessed on 18 February 2015. See also Ejike Ejike 'Nigeria Ranks 136th Most Corrupt Country in Latest Global Corruption Index,' available at *http://leadership.ng/news/392876/nigeria-ranks-136th-corrupt-country-latest-global-corruption-index,* accessed on 18 February 2015.

this requirement or to show that officials of the NCS or NESREA are not bribed, to ensure that such carriers of UEEE are cleared without producing all the documents specified in this section? NESREA also makes no provision regarding whistleblowing within the Agency to deter would-be corrupt officials in such situations. Although the provisions represent determined efforts by the government to control illegal importation of WEEE into the country, the loopholes reduce the effectiveness of their enforcement. The integrity of NESREA and NCS officials must be considered in the application of this part of the Regulations. Hence, in the next part, on the implementation of the EPR principle under the EES Regulations, the thesis seeks to provide some clarity concerning the questions raised above.

5.3.6.6 The extended producer responsibility principle

The EPR principle is an integral part of the EES Regulations. It requires every importer, exporter, manufacturer, assembler, distributor and retailer of various brands of EEE products to subscribe to an EPR Program including the Buy Back Program specified in its Schedule VIII.[192] The EES Regulations also places mandatory take-back obligations on producers, importers, distributors and retailers to take back the EOL EEE and to set up collection centres.[193]

This part of the EES Regulations must be read in conjunction with its Schedule VIII, entitled Guidelines for Extended Producer Responsibility in accordance with Regulation 11 (1) concerning *new EEE only.*[194] The Guideline provides that private individuals, retailers, refurbishers, distributors, producers and recyclers shall partner with NESREA to establish an *effective*[195] EPR Program, within two years of the commencement of the regulations, in order to achieve the Buy Back Program within

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[192] Reg. 11 (1). Also, importers/distributors for all EEE equipment traded or donated to individuals, educational institutions, religious organizations, communities or body corporate by whatever means, shall comply with sub-regulation (1). See Reg. 11 (2).

[193] Consumers are also to return end of life EEE to collection points and centres. Regulation 11 (4) (a)-(c).

[194] Emphasis mine.

[195] Emphasis mine.

period of two years.[196] It also requires manufacturers and importers to submit a proposal for an EPR Programme to NESREA for approval. Such a proposal must include elements for successful implementation of the scheme, such as the establishment of a process for the collection, handling, transportation and final treatment of post-consumer electrical electronic products (including new and used electrical and electronic products) regardless of who the original brand owner is; and incorporating the principles of a pollution prevention hierarchy by moving progressively from disposal to reduce, repair, re-use, recycle and recovery of post-consumer products.[197] Such a proposal must also be accompanied by an annual report on their EPR programme during the previous fiscal year including information relating to the total amount/percentage of consumer electrical electronics sold, collected, processed, stored, treated or contained, re-used, recycled recovered and repaired, and the type of processes used to do so; and the process of internal accountability used to monitor environmental effectiveness, and other information required by NESREA.[198]

The producer/manufacturer's specific responsibility under the Guidelines include:

- Collecting any e-waste generated during the manufacture of electrical and electronic equipment and channelling the same for recycling or disposal;[199]
- Ensuring that all electrical and electronic equipment are provided with a unique serial number or individual identification code for tracking the products in the e-waste management system;[200]

[196] Reg. 11 (3) and Para (1) of Schedule VIIII. The Regulations do not provide a definition of what a buy-back programme entails.

[197] Schedule VII (1).

[198] Schedule VII (2). Such a report must be submitted on or before June 30 in each year to NESREA.

[199] Para 3 (a) of Schedule VIII.

[200] Para 3 (b) of Schedule VIII.

- Collecting e-waste generated from the EOL of their products in line with the principle of EPR, and ensuring that such e-wastes are channelled to NESREA accredited/registered recycler;[201]
- Setting up collection centres or take-back system either individually or collectively for all EEE at the EOL;[202]
- Establishing an individual or collective financial system to meet the costs involved in the ESM of e-waste, i.e. collective or individual producer responsibility;
- Financing, and organising a system to meet the costs involved in the ESM of e-waste generated from the EOL of its own products and historical waste available from the date from which these rules come into force. Such financing system shall be transparent. The producer may choose to establish such financial system either individually or by joining a collective scheme:[203]
- Providing contact details of dealers and authorised collection centres to consumers to facilitate return of used EEE, and creating awareness of same through publications, advertisements, posters, etc., including proper recycling of EEE.[204]

The EES Regulations and its Schedule VIII sets out necessary provisions integral to the implementation of the EPR principle in Nigeria, which are analysed here. First, the requirement that an importer, exporter, manufacturer, assembler, distributor and retailer of various brands of EEE products should subscribe to an EPR Program, including the Buy Back Program suggests that the intention of the regulations is to ensure shared responsibility of these entities through a PS approach. Consumers are also to subscribe to such a programme by ensuring that they are to return EOL EEE to a NESREA-authorised dealer/recycler or to a collection centre.[205] However, to give effect to the supposed intention of the regulations to apply the PS approach as an extension of the EPR principle,

[201] Paragraph 3 (c) of Schedule VIII; section 11 (b) of the EES Regulations.

[202] Para 3 (d) of Schedule VIII.

[203] Para 3 (e) of Schedule VIII.

[204] Schedule VII (3).

[205] Para 7 (a) of Schedule VIII of the EES Regulations.

the Guideline makes no reference to the Product Stewardship Programme/Plan to be submitted by manufacturers and importers under the Sanitation and Waste Regulations 2009 above. Already, this appears to be a fragmentation of legislation regarding the implementation of the EPR principle as applicable to the stakeholders mentioned above. It is unclear whether the EES Regulations 2011 are to be read in consonance with the 2009 Regulations to enable producers and importers decide which plan ought to be applied/submitted, or if the EES Regulations supersedes the 2009 regulations, which are still in existence. It can be implied that the provisions of the EES Regulations are more new/used EEE and e-waste-specific and that the proposal to be submitted for an EPR programme should suffice, since it includes the participation of stakeholders in the EEE chain, unlike the 2009 regulations, which mention only producers and importers.

Second, the EES Regulations also require a partnership between government/NESREA and all stakeholders, including private individuals, retailers, refurbishers, distributors, producers and recyclers to establish an effective EPR/Buy Back Program. This proposed partnership between government and voluntary/private initiatives on e-waste is integral to successful implementation of EPR to the management of this waste stream (see Chapter 4). As at the time of submitting this thesis, such a programme is yet to be put in place, even though the regulations came into effect in 2011. It can be assumed that the main reason for the absence of this programme is the failure of the guidelines to set out clearly what the measures for effective EPR entail, and the lack of a proper definition of EPR under the EES Regulations, as has been done in the South African Waste Act.[206] Setting the requisite measures that government must take in the adoption of EPR measures for new and used EEE provides a path that producers/importers/recyclers, must follow outside of registration with the relevant agencies.

Third, the producer/manufacturer is responsible for the collection of e-waste generated during manufacture of EEE under the Guidelines. This provision seems to be

[206] Section 18 of the Waste Act 2008.

applicable to manufacturers of EEE outside Nigeria, since there is no major international manufacturer of EEE presently operating a manufacturing facility in Nigeria.[207] Perhaps the intention of the Regulations is to prevent EEE manufacturers from including e-waste or unusable components of EEE from accompanying shipments of new and used EEE into Nigeria. Nevertheless, in line with the definition of a *producer* under the Act – i.e. someone who 'manufactures in or outside EEE equipment for the Nigerian market,'[208] such a provision may apply to local producers/assemblers in Nigeria,[209] who often import completely knocked down parts to reassemble in the country for sale as brand-new EEE.[210] Additionally, the responsibility of a producer under the EES Regulations regarding collection of e-waste at its EOL, and ensuring that such e-wastes are channelled to NESREA-accredited/registered recyclers applies realistically to the importer of e-waste, rather than a producer. As noted in Chapter 2, an importer is the key actor in the EEE chain in a developing country context, and should be made to bear the arising responsibilities for new or used EEE at its EOL.

Fourth, the EES Regulations envisage a collective producer responsibility or IPR system for the collection and management of e-waste. Realistically, this should be termed collective or individual *importer* responsibility. As noted in Chapter 2, it will be unrealistic to expect a manufacturer of EEE in Germany or the U.S. to contribute to the establishment of a collection centre for e-waste in Nigeria, while leaving the importer with no such responsibilities. Therefore, the system for the collection and management of e-waste should be applicable to an importer, and not a producer under the regulations. Also, although *producer responsibility* run through the EES Regulations and its Schedule VIII, the absence of any such collective or individual PRO in Nigeria to guide the

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[207] Such global manufactures include Phillip, Motorola, HP, Compaq, Dell, Toshiba, Nokia Samsung, Sony Ericsson, LG, Sharp, Somotex who are key players in the Nigeria EEE market. See Ogungbuyi *et al.,* above (note 1) at 46.

[208] The regulations and guidelines do not provide a definition of a manufacturer.

[209] See Footnote 169 above.

[210] Ogungbuyi, above (note 1) at 46. These organisations have their registered head offices in Victoria Island, Lagos state and other central business districts in various cities in Nigeria.

implementation of the EPR principle is detrimental to the successful operation of the EES Regulations.

Fifth, with further regard to importer responsibility, the EES Regulations require such an importer to contribute to financing the costs of e-waste management collection and the ESM of such e-waste. This requirement of financing reflects the financial/economic responsibility required of a producer or importer, as the case may be, under the EPR matrix. It is assumed that a proposal submitted to NESREA by an importer in conjunction with other stakeholders should clearly set out the exact type of financial/economic instrument to be applied, be it an ARF levied on consumers, a deposit refund system, import levy on the producer, etc. (as set out in Chapter 2). It should also be noted that the EES Regulations and its Schedule considers the suggestion of the Basel Guideline Document on Mobile Phones in Chapter 3, that such financial system must be 'transparent.' This shows the influence which such international guideline documents, although non-binding, have at the national level.

The EPR principle has been adequately represented in the EES Regulations, and provides scope for implementation of the EPR matrix to importers and other stakeholders in the EEE chain. Hence, another important factor that may facilitate the implementation of this principle is collection centres. The section below examines the reality of collection centres in Nigeria.

5.3.6.7 E-waste facility/collection centres

The EES Regulations also requires EEE manufacturing, processing, operational and power organisation (generation, transmission and distribution), and a WEEE / e-waste facility is required by the regulations to carry out an EIA before commencing any activity; to submit an EAR to NESREA every three years; and submit an EMP every five years.[211]

[211] An environment assessment report (EAR) refers to a report prepared for an organisation or body corporate that identifies potential or existing environmental contamination liabilities. Under the regulations, an environmental management plan (EMP) refers to the process organisation must follow to maximise its compliance and minimise harm to the environment. It also helps an organisation to map its progress towards achieving continual improvements. See Reg. 69; Reg. 4 (1); and Schedule III, which sets out guidelines for preparing an EMP.

Failure to submit an EAR to NESREA is an offence liable on conviction to a N200,000 (R13,000) fine or six months' imprisonment, or both.[212] The owner or operator of a WEEE facility must also prepare and put in place a functional Emergency Response Plan describing the measures to be taken in the event of any discharge of deleterious substances.[213] It therefore constitutes an offence if any person operates an EEE facility without providing e-waste collection centres for take-back of the e-waste in Nigeria fails to supply the requisite information necessary to operate, or fails to maintain such a facility in a sanitary manner.[214]

Concerning the establishment of e-waste collection centres, the EES Regulations define a *collection centre/point* as one where e-wastes are collected and stored temporarily for the purpose of recycling.[215] Thus, all corporate bodies or organisations intending to establish an e-waste collection centre or recycling plant must register with NESREA and must provide the requisite information to operate it.[216] Such collection centres or recycling plants must also comply with the Guidelines for Establishment of a Facility (Collection Centre) set out in Schedule XIV.[217] The operators of such e-waste collection centres may be manufacturers, importers and dealers but shall also include interested parties.[218] The inclusion of interested parties in this definition of operators provides sufficient scope for private e-waste recycling companies to establish an e-waste recycling plant.

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[212] Reg. 61 (3) (n) and 67(2).

[213] Reg. 5 (3); Schedule IV sets out a Guide Template for Emergency Procedures in EEE Facility.

[214] Reg. 61 (2) and (3) (j) and (k).

[215] Reg. 69.

[216] Reg. 35 and 39 (1). Schedule XIII sets out the requirements for approval of an EEE recycling facility. Such requirements include the operator's personal information and address, with an EIA or EAR where necessary.

[217] The guidelines set the necessary criteria for the storage and physical conditions of the collection centres.

[218] Schedule XIV (1).

The EES Regulations also provide that such operators must ensure that e-waste is not stored for longer than one year on site; is not disposed of in trash receptacles or at a dumpsite or landfill, or burnt; and must ensure that e-waste collected for recycling is transported to the designated recycling centre.[219] Such operators must also liaise with the transporter to recycling plants to ensure that they maintain copies of all e-waste manifests and/or receipts; forward a copy of said manifest and receipts to NESREA within 30 days of waste removal, and sign copies of the e-waste manifest.[220] Failure to submit such documents attracts the same penalty for failure to submit an EAR above.[221]

Despite the ambitious and well-thought-out provisions of the EES Regulations and its attendant guidelines in the Schedules, it appears the government has not fully considered the implications involved in the setting up of collection centres or registered e-waste facilities. This assertion stems from the omission of the definition of EPR and EPR measures anticipated under the regulations. Currently, there is no single licensed e-waste recycling and state-of-the-art disposal facility in the country, thus making the provisions of the EES Regulations inapplicable to the *recyclers* envisioned therein. As a result, a much unusable EEE is being stockpiled in homes and offices, until they are piled so high that they are disposed of crudely by open burning in private homes or dumped with general domestic/business waste.[222] While the provision on interested parties provides sufficient scope for private individuals to set up a recycling plant for e-waste processing, management and disposal, the logistics of it all may not be an easy task. As was determined from the researcher's interview with personnel of the oldest recycling company in South Africa (Company A) in Chapter 4, the cost of setting up an efficient e-

[219] Reg. 34 (4).

[220] Copies of such e-waste manifests shall be made available for review during an inspection visit by officers of NESREA. See Reg. 34 (5). The requirement of record-keeping for e-waste received and quantity recycled is set out under Reg. 40 (2) and such records must be kept for a minimum period of five years.

[221] Reg. 61 (3) (m).

[222] Amachree, above (note 110) at 19.

waste recycling facility is upwards of R5m (N75m).[223] Also, various collection centres for e-waste are strategically placed in the Western Cape and Gauteng by the main recycling company, Company A, in conjunction with the EEE retailers to facilitate collection and sustainable disposal of WEEE. The placement of these centres in two commercial/business regions is strategic, since more e-waste seems to be generated there. Therefore, in setting up collection centres in future, it is imperative that the particular financial/economic obligations are met by importers of new and used EEE in Nigeria, and that such a financial system provides appropriate fiscal incentives such as tax cuts, subsidies, etc. This system must be agreed upon, in conjunction with importers, distributors, consumers, recyclers and Nigeria's government (in conjunction with NESREA) to aid the establishment of an e-waste collection centre in Nigeria.

It should also be noted that the Guidelines for EPR Programme in Schedule VIII of the Regulations require dealers, distributors, refurbishers and dismantlers to be registered with NESREA and keep appropriate records of any and all e-waste collected and transported to an e-waste collection centre/facility. The requirement of record-keeping under the EES Regulations appears ambitious. Unlike the South African Waste Act 2008, which clearly provides for record-keeping of all waste collected/managed and the requisite information submitted to SAWIS, it is merely assumed under the EES Regulations that NESREA will be in charge of record-keeping of all e-waste volumes collected.[224] This requirement will be burdensome for NESREA officers, who, although employed under various departments therein, are already overworked in trying to enforce the provisions of cumulative environmental legislation in Nigeria. Perhaps the drafters of the regulations should have considered providing for a specific department under NESREA that would be responsible for the collection and consolidation of all e-waste data on importation and recycling, as the lack of available e-waste data has been the bane of importation into the country over the years. Realistically, however, obtaining e-waste data in Nigeria may be

[223] This approximation is based on the current exchange rate of the naira to the rands as at June 2015 (i.e. R1 = N16.2).

[224] Section 7 (k) requires NESREA to '…establish a databank on regulatory and enforcement mechanisms of environmental standards…' Perhaps such e-waste volumes can be recorded in such a proposed databank when it is eventually established.

fraught with problems owing to the inconsistencies associated with new and used EEE and waste EEE. As Adeniran and Abdulkarim observe, the dynamic nature of the electronics market makes it difficult to calculate the stock data for private and industrial sectors.[225] They note that storage data may not be readily available, because storage may be in the informal sector and data related to recycling is difficult to track and not easily available, because most of the e-waste items are dismantled to recover usable parts and materials of economic landfill. He also adds that e-waste residues are dumped in open unregistered landfills without any assessment of quantity and quality. It therefore appears that the issue of collating e-waste data presents a present and future Herculean task that should be addressed as a matter of urgency as one of the primary issues to hinder effective sustainable e-waste management in Nigeria.

The above provision of the EES Regulations attests to the apparent commitment of Nigeria's government to fulfil its obligations under the Basel Convention 1989 in the minimisation of waste, and highlights its unwavering commitment to the control of imports of e-waste into the country. The regulations also recognise the different roles of recyclers, distributors, refurbishers and dismantlers in Nigeria's informal market. However, it appears that the EES Regulations and the Harmful Waste Act 1988 are being propagated more for EEE management in Nigeria than the Sanitation and Waste Regulations 2009. As stated above, the 2009 Regulations acknowledge the need for sustainable practices to be applied to waste generation and management, including the need for manufacturers and producers to include environmental concerns in the design, production and disposal of a product, and contains definitions relating to EEE. It does not prohibit or penalise issues relating to new or used EEE and WEEE as the EES Regulations do, but its provisions regarding sustainable practices – including design, production and disposal – allude to the physical/environmental responsibility under the EPR matrix. Therefore, it is affirmed that the Sanitation and Wastes Regulations clearly incorporate the EPR principle. Also, the provision in its Schedule IX makes room for the implementation of a an EPR/PS programme, when applied in consonance with the EES

[225] Adeniran and Abdulkarim, above (note 20) at 645.

Regulations and the Harmful Waste Act, even though the latter two laws are more EEE-specific. Both the Sanitation and Waste Regulations 2009 and the EES Regulations also allude to the importer as the key actor in the EEE chain on whom the responsibilities for the EPR matrix should be placed. Both laws also allude to the extension of the EPR principle to include PS, which creates more latitude for effective implementation in a developing Nigeria. Therefore, in terms of mandatory legislation, Nigeria appears to have the requisite legislation in place for e-waste management. Although these laws still require some amendment, the current state of the law is such that it constitutes a good footing for the implementation of an EPR/PS programme for e-waste. Nevertheless, Nigeria's government still needs to inform the general public as to how these legislative provisions are interlinked and can be utilised to ensure sustainable management of EEE in Nigeria. Therefore, even though the provisions of both laws provide scope for the application of the EPR/PS principle, the researcher has identified specific gaps in these laws, against the backdrop of the South African e-waste regulatory framework discussed in the previous chapter. They are set out below.

5.4 Identifying imbalances in Nigeria's e-waste regulatory framework

Flowing from the above analysis of regulatory framework in Nigeria, the following are the inherent gaps in its e-waste regulatory framework that are inimical to the successful implementation of an EPR/PS approach therein:

5.4.1 Life-cycle assessment and extended producer responsibility measures

The South African Waste Act differentiates between EPR measures and life-cycle assessment (LCA). While the former refers to 'measures that extend a person's financial or physical responsibility for a product to the post-consumer stage…,' the latter refers to a process where the potential environmental effects or impacts of a product or service throughout the life of that product or service is being evaluated.'[226] The LCA may also be required of a producer/importer concerning an EEE product, as part of requirements under

[226] Section 1 of the Waste Act 2008 of South Africa.

EPR measures under the Act.[227] LCA is referred to as a cradle-to-grave environmental policy tool[228] and the EPR principle as a cradle-to-cradle one.[229]

In contrast, Nigeria's EES Regulations are based on the LCA, noting that the regulations 'shall cover all the aspects of the electrical/electronic sector from cradle to grave.'[230] While the EES Regulations also promote and adopt EPR, it fails to define what LCA is or what the EPR principle entails. It also doesn't prescribe the adoption of LCA measures in consonance with EPR measures, if any, since the EES Regulations provide no guidance on what an EPR measure should entail.

5.4.2 Regulation of hazardous substances in new or used EEE

The Hazardous Substances Act 1973 of South Africa was adopted to control hazardous substances that may cause injury, ill health or death of human beings owing to its toxicity, corrosiveness or sensitivity. The Act controls the importation, dumping, etc. of such substances in certain electronic products.[231] This Act is also read in conjunction with the Customs and Excise Act 1964, which empowers a Commissioner for Customs and Excise to examine and analyse imported electronic products to ensure that they do not contain substances that may be harmful to human health and the environment.[232] As noted in Chapter 4, most new and second-hand EEE are imported into South Africa, and this Act regulates such importation.

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[227] S 18 (2) (f) and s 69 (1) (k) of the NESREA Act 2007.

[228] 'Framing Eco-innovation: The Concept and the Evolution of Sustainable Manufacturing' in OECD *Sustainable Manufacturing and Eco-Innovation: Framework, Practices and Measurements,* Synthesis Report (2009) at 30, available at *http://www.oecd.org/innovation/inno/43423689.pdf*, accessed on 13 June 2014.

[229] Community Recycling Network 'Two Approaches to Product Lifecycle' Autumn Newsletter, March 2012, available at *http://communityrecyclers.org.nz/assets/CRN-March-2012-Newsletter.pdf*, accessed on 23 May 2014.

[230] S. 2 (2) of the NESREA Electrical/Electronic Sector Regulations 2011.

[231] Introduction/Full title of the Hazardous Substances Act 15 of 1973.

[232] Sections 1, 12(1) and (3) of the Act.

In contrast, in Nigeria, there are local manufacturers/assemblers of EEE that import EEE components from developing countries for assembly and eventual sale in the domestic market. While it can be assumed that the developing countries in which these EEE components are manufactured are subject to a form of RoHs Directive or its equivalent, such as the South African Hazardous Substances Act, the absence of regulations or a list of hazardous substances that should be contained within a new or used EEE entering into Nigeria is a fundamental lapse. Although Schedule XVI sets out a list of some hazardous solvents in EEE manufacturing, processing, assembly and recycling, this is not as comprehensive as that of the Hazardous Substances Act or those set out in the Waste Classification and Management Regulations 2013. Over and above this, from the lack of a comprehensive regulations on hazardous substances, the publication and promotion of consumer information through all forms of media about the hazardous nature of such substances to human health and the environment is similarly absent.

5.4.3 Permit/Licensing system

The South African Waste Act 2008 has established a licensing system in different waste categories and different waste management processes.[233] Applicants interested in the recycling and storage of e-waste are required to comply with norms and standards for recycling and storage of same, and where necessary, provide a basic assessment report of such proposed activities.[234]

Similarly, the Nigerian Electrical/Electronic Sector Regulations 2011 state that the export or transit and importation of used EEE or e-waste requires a license/permit. It also prohibits the discharge of any toxic or hazardous substances into Nigeria's air, land, water by a body corporate or organisation without a permit. Where the application for a permit is for a new facility, an EIA report is required. However, the South African Waste Act

[233] See Department of Environmental Affairs (2013) National Environmental Management: Waste Act 2008 (Act 59 of 2008) List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment in GN 921 *GG* 37083 of 29 November 2013; and Waste Classification and Management Regulations in GN R634 *GG* 36784 of 23 August 2013.

[234] See the national norms and standards for the storage of waste in GN 926 *GG 37088* of 29 November 2013.

expressly provides for the capturing of all license applications in a system. There is no such provision for this in the EES Regulations. NESREA is empowered to '…enforce environmental control measures through registration, licencing and permitting systems,'[235] and the National Environmental (Permitting and Licensing System) Regulations 2009 support this provision. However, these regulations do not prescribe the capturing of all license applications in any such system or provide for any specific similar to that in South Africa. The purpose of capturing such licenses/permits in a system is to assist NESREA with monitoring the activities of registered e-waste facilities/recyclers and to enable the public to verify the authenticity of such an operation or facility. The absence of such a system attests to the fact that the government itself is yet to show commitment in ensuring that the provisions of the regulations are enforced.

5.4.4 Implementation of a mandatory EPR programme

The South African Waste Act requires the Minister of Environment to liaise with the Minister of Trade and Industry in implementing a mandatory EPR programme for the reduction, re-use, recycling, recovery, treatment and disposal of waste, and specifies EPR measures in respect of specific products such as e-waste. The National Waste Management Strategy 2011 also notes that such a mandatory EPR scheme can be declared for e-waste, when voluntary EPR schemes elaborated through IWMPs have failed to effectively manage a waste stream.[236] However, the legal framework supports a voluntary framework, which seems to be effective for e-waste management in South Africa.

In contrast, Nigeria's EES Regulations, read in conjunction with the Sanitation and Waste Regulations 2009, appear to adopt a mandatory EPR principle to e-waste management. Both pieces of legislation note the need for their implementation and implicitly sets out the responsibilities under the EPR matrix that should form part of a proposed EPR/PS e-waste management plan. However, Nigeria's regulatory framework

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[235] S. 8 (j) of the NESREA Act 2007.

[236] Department of Environmental Affairs *National Waste Management Strategy* (GN 344 in *GG* 35306 of 4 May 2012) at 47.

fails to declare e-waste as a 'priority waste', as has been done in South Africa.[237] In view of the fact that Nigeria has historically been a target dumping ground for toxic waste, this is an anomaly that should be immediately rectified in policy documents. Additionally, the current informal-voluntary initiative represented through the e-waste markets do not adopt sustainable practices in their operations, which is at variance with the objective of the EPR principle, which seeks to 'reach the desired environmental objective by ensuring decreased environmental impact.'[238]

5.4.5 The establishment of a national database for EEE import and export data

The South African Waste Act includes provisions for the establishment of a national and provincial waste information system (SAWIS), including data on the quantity, type and classification of waste generated, stored, transported, treated, etc.[239] There is no provision for such a system in Nigeria's regulatory framework. While the NESREA Act mandates NESREA to 'develop environmental networks and compile and synthesize environmental data from all sectors,'[240] this has not yet been effected. The Nigerian Customs Service (NCS) similarly has a duty to 'collect accurate import and export data [including EEE data] for economical statistical usage and planning.'[241] The synergy between the NCS and NESREA regarding such EEE data collection can only be achieved if there is a system such as SAWIS in this regard.

Turner acknowledges that 'e-waste recycling is largely unregulated, [so] no data is available to track its fate. Accurate data regarding how much is generated, how it is managed, and where it is processed (either domestically or abroad) is largely

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[237] Such a waste is declared as such if the Minister for the Environment believes on reasonable grounds that such waste is hazardous to health, well-being or the environment as a result of its quality or composition. See section 14 (1) of the Waste Act 2008.

[238] Lindhqvist, above (note 2).

[239] Ss 60-64 of the Waste Act 2008.

[240] Section 8 (l) of the NESREA Act 2007.

[241] Nigerian Customs Service website - *https://www.customs.gov.ng/About/function.php*, accessed 23 January 2015.

unavailable.'[242] While this is correct, it is imperative that national governments make efforts to track any and all EEE data regarding importation, exportation, recycling and disposal. This is because the existence of a database serves to ensure accountability of the importers for all e-waste generated and/or imported, in order to calculate the attendant financial responsibility of such an importer. A database that contains information regarding all EEE stored, transported, treated, etc. also assists a government in monitoring the amount of EEE being recycled, in order to ensure sustainability and fulfilment of the environmental responsibility under an EPR matrix. Hence, the South African government's effort through the establishment of SAWIS is laudable and worthy of emulation by Nigeria's government. The effect of such a database is imperative in monitoring the quantities/volumes of new and used EEE entering the country, and the amount of e-waste imported or submitted to a collection centre for recycling or disposal.

5.4.6 Occupational Health and Safety Act and the absence of legislation on precious metals

The South African Occupational Health and Safety Act 1993 places responsibility on the manufacturer, importer, seller or supplier of any article for use at work to ensure, as far as is reasonably practicable, that the article is safe and without risks to health when properly used.[243] During the site visit to Company A's e-waste recycling plant in Gauteng, the researcher observed that the use of personal protective equipment (PPE) by workers in the dismantling of various e-waste fractions was compulsory. The respondent interviewed also showed the researcher a licence granted to the company by the Minister of Labour that indicates that the facility complies with health and safety regulations.

In contrast, the Nigerian EES Regulations provide that all corporate organisations involved in e-waste handling to ensure that the technicians, repairers or scavengers wear appropriate PPE. This is not being adhered to, particularly as the provisions of the Labour, Safety, Health and Welfare Bill of 2012 has not yet been passed into law. However, the

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[242] Linda Turner *Managing Electronic Waste: Issues with Exporting E-waste* (2010) CRS Report for Congress, 1.

[243] Section 10 (1) of the OHSA Act 85 of 1993.

Bill empowers the National Council for Occupational Safety and Health to enforce and implement occupational health and safety measures in the workplace and carry out inspections of such workplaces to promote the protection of lives and properties.[244] Okojie noted in 2010 that there are only 60 factory inspectors in the whole of Nigeria. Umeokafor et al. note that this lack of manpower and commitment to ensuring better enforcement of OSH are a hindrance to optimum enforcement of same in Nigeria.[245] With respect to the above provision in the EES Regulations, it is doubtful if the provision can be enforced by NESREA with the bulk of other responsibilities required of the agency under the regulations. NESREA fails to include a provision stating that the provisions of existing OSH regulations in Nigeria be read in conjunction with that part of the provision.

Additionally, the South African Precious Metals Act 2005 provides for the issue of a licence to an e-waste recycling company, which may extract precious metals from e-waste fractions during processing and dismantling.[246] In contrast, no such legislation exists in Nigeria, and the EES Regulations merely penalises the leaching of precious metals with acids and other hazardous wastes from PWBs,[247] without alluding to a licence or legislation for the extraction of precious metals. The provisions of the EES Regulations are not sufficient to regulate the collection and management of precious metals that are crudely leached from PWBs in the informal e-waste markets in Nigeria. The adoption of such legislation is necessary to regulate same in Nigeria.

Despite these disparities, it is imperative that NESREA's efforts, in collaboration with local and international agencies. to monitor and control illegal shipments of e-waste under the guise of used EEE be highlighted. These efforts are set out below.

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[244] Nnedinma Umeokafor, David Isaac, Keith Jones *et al.,* 'Enforcement of Occupational Safety and Health Regulations in Nigeria: An Exploration' 2014 (3) *European Scientific Journal* 93 at 96.

[245] Ibid at 97.

[246] Precious Metals Act 37 of 2005, s 7(1) *(d).*

[247] Section 61 (3) *(g),* EES Regulations.

5.5 Accomplishments of NESREA via the EES Regulations

5.5.1 Interception of e-waste exports via collaboration with international and local collaboration

NESREA, as the designated environmental agency for enforcement of all environmental legislation in Nigeria, works closely with the NCS to control the importing of WEEE into Nigeria, and the exporting of same outside Nigeria. This collaboration is facilitated through the Nigeria Integrated Customs Information System (NICIS) portal established by the government to monitor importation of used EEE in Nigeria.[248]

In accordance with EES Regulations, NESREA has also ensured the certification of credible importers of used EEE and sanctioned importers not certified by it. Overall, between 2010 and 2013, as a result of such collaboration, Nigeria's membership of the Seaport Environmental Security Network (SESN) and the International Network for Environmental Compliance and Enforcement, (INECE),[249] about 14 containers and 12 trucks of e-waste were repatriated, while 17 unregistered importers were intercepted with necessary punitive charges imposed.[250]

Salient examples of such interceptions are pertinent here. In April 2010, a ship called the MV Nashville, a Maersk Vessel from Rotterdam, was caught attempting to dump lead batteries into Nigerian waters. Other e-waste such as broken TVs, refrigerators, tires, vehicle spare parts and automobile batteries were discovered on board. The crew were subsequently arrested. The vessel was detained by port officials and the Federal Government of Nigeria, through NESREA, ordered the ship to return to the Netherlands, its country of origin.[251] Also, in June and October of the same year, two ships, the MV Gumel (from Germany) and the MV Vera D (from the U.S.), were arrested and detained

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[248] Amachree, above (note 110) at 21.

[249] Nigeria also networks with the International Criminal Police Organisation (INTERPOL) and the U.S.'s EPA, the UK's EA and other sister agencies. See Amachree, above (note 98) at 18.

[250] Amachree, above (note 110) at 21.

[251] Karen Stephenson 'Recycling Toxic Waste can Save a Life,' available at *http://www.greensolutionsmag.com/back_issues/GSM-Apr11/f2.php,* accessed on 4 February 2013.

at the Lagos port for carrying eight containers laden with toxic waste and toxic black-and-white TVs.[252] Though these two incidents occurred prior to the adoption of the EES Regulations, it is indicative of NESREA and NCS's efforts to combat dumping of WEEE in Nigeria.

On 5 January 2013, the ship the MV Marivia was intercepted in Tin-Can Island Port Complex (TCIPC) at Apapa, Lagos State, Nigeria. It was filled with containers laden with tons of toxic e-waste (used TVs, used computers, used microwaves, pressing irons and stereo sets).[253] The vessel originated from Tilbury, the UK. NESREA received an alert about the arrival of the suspected illegal shipments of e-waste in two containers on the above-named vessel. It informed operatives of the State Security Services (SSS) of this alert, and mandated them to arrest the importers. This was carried out effectively.[254] Nigeria's Federal Government ordered that the ship pay a fine of US$1m and directed that it return immediately to its port of origin in the UK, in accordance with the provisions of Nigeria's Harmful Waste (Special Criminal Provision) Decree of 1988 and the EES Regulations 2011.

Flowing from this, the UK's Environmental Agency has been working actively with NESREA to prevent further exportation from its jurisdiction to Nigeria. On 20 June 2014, Joe Benson, a Nigerian national, was sentenced to 16 months' imprisonment at Snaresbrook Crown Court, UK, for illegally exporting 46 tonnes of hazardous e-waste to

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[252] 'Nigeria orders return of toxic waste containers to UK,' January 11, 2013, available at *http://premiumtimesng.com/news/114722-nigeria-orders-return-of-toxic-waste-containers-to-u-k.html*, accessed on 13 March 2013.

[253] 'FG Slams $1m fine on importers of e-waste,' available at *http://www.shipsandports.com.ng/2013/news/FG_slams_1m_dollar_fine_on_importers_of_ewaste.php,* accessed on 21 January 2013. See also 'Nigeria orders return of toxic waste containers to UK,' available at *http://premiumtimesng.com/news/114722-nigeria-orders-return-of-toxic-waste-containers-to-u-k.html,* accessed on 22 January 2013.

[254] 'Nigeria orders return of toxic waste containers to UK' (note 253). See also Godfrey Bivbere 'Danger! Shipload of Toxic Waste at Lagos Port,' available at *http://www.vanguardngr.com/2013/01/danger-shipload-of-toxic-waste-at-lagos-port/,* accessed on 4 February 2013.

countries in Africa, including Nigeria.[255] The EA's investigators found broken CRT TVs and ozone-depleting fridges/freezers in four containers intercepted at ports between September 2012 and April 2013.[256] Benson stood to make around £32,000 from the exporting of the intercepted containers.[257] He had been convicted of exporting hazardous e-waste to Nigeria in 2011, but continued to illegally export TVs and freezers to West Africa while appealing (unsuccessfully) his previous convictions.[258] This ruling is noteworthy, because it is the first time anyone has been sentenced to prison for illegal e-waste exports arising from an environmental agency's investigations.[259]

The above scenarios reveal Nigeria's commitment to the control of illegal dumping of e-waste in Nigeria, and the commitment of environmental agencies in other developed countries to work with the country. This in line with the Basel Convention's requirement of co-operation between relevant environmental agencies of country parties to the Convention, in order to control the global transboundary movement of e-waste. It also sheds light on the fact that mandatory legislation described above is being effectively implemented, in conjunction with other agencies.

PART B

VOLUNTARY INITIATIVES ON E-WASTE IN NIGERIA

Part A has analysed the extent to which the EPR principle and the EPR matrix have been adopted and consolidated in mandatory regulations on e-waste in Nigeria is analysed. In

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[255] 'Waste Dealer jailed for 16 months after dangerous shipments stopped at port,' available at *https://www.gov.uk/government/news/waste-dealer-jailed-for-16-months-after-dangerous-shipments-stopped-at-port,* accessed on 14 November 2014. See also Ben Messenger 'Essex Man First in UK to Be Jailed for Illegal E-waste Exports,' 23 June 2014, available at *http://www.waste-management-world.com/articles/2014/06/essex-man-first-in-uk-to-be-jailed-for-illegal-e-waste-exports.html,* accessed on 14 November 2014.

[256] 'Man jailed for illegally exporting electrical waste to Africa,' available at *http://www.theguardian.com/environment/2014/jun/20/man-jailed-illegal-exporting-electrical-waste-africa,* accessed on 19 November 2014.

[257] Messenger, above (note 256).

[258] Ibid.

[259] Ibid.

Part B, the existence of informal e-waste markets in Nigeria, which constitute the ambit of the voluntary approach to e-waste in Nigeria will be highlighted. These e-waste markets constitute the informal-voluntary approach. As stated in Chapter 2, the informal-voluntary approach is one developed by industry and implemented informally.

5.6 E-waste management in the informal sector: Scope for transition from an informal-voluntary approach to a voluntary-to-mandatory approach

The use of the words *scavenger*, *refurbisher* and *dismantler* in the EES Regulations are indicative of Nigeria's government's recognition of the thriving informal sector for e-waste in the country. Apparently, the informal sector (comprising of the four markets) provides a mainstay for e-waste collection and recycling in Nigeria,[260] through a network of 'self-employed individuals'[261] whose levels of education, training and expertise are surprisingly high, with some having graduate degrees in electronic engineering or other scientific discipline.[262] The sector provides jobs and livelihoods to various individuals, particularly recent rural migrants, who have migrated to the city in search of greener pastures. Up to 80,000 people are involved in the informal e-waste recycling sector in Nigeria, with more than 52,000 persons engaged in refurbishing in Nigeria owing to the income it generates. Revenue per refurbished EEE is between N2,000 to N4,000 (i.e. R115 to R250), depending on the nature of the fault.[263]

Refurbishing businesses are carried out in makeshift workshops and e-waste recycling activities (i.e. refurbishment and dismantling) often involve the leaching of precious metals from PWBs or burning of copper cables and wires, monitors and TV casing, which creates an accumulation of ash and partially burnt materials at burning

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[260] E-waste recycling activities in Nigeria include mainly dismantling, uncontrolled dumping, and pyrolitic processes. See Ogungbuyi *et al.,* above (note 1) at 83.

[261] Manhart *et al.,* above (note 15) at 25.

[262] In 2005, BAN identified the Ikeja Computer Village as the largest computer new/used computer market in Africa. See *The Digital Dump*, above (note 3) at 16, 17.

[263] Ibid at 85.

sites.[264] Insulated foam from dismantled refrigerators or old car tyres are often used as the main fuels for the fires, thus contributing to acute chemical hazards and long-term contamination at burning sites, as well as emitting ozone-depleting substances and greenhouse gases into the atmosphere.[265] Workers involved in these dismantling and refurbishing processes are exposed to inhalation via the burning of cables and toxic fumes emanating from the acid leaching of precious metals.[266] These workers complain of incessant, recurring coughing, general weakness and irritation of the eyes and skin,[267] because these repairs/refurbishments are carried out without any PPE. This clearly violates Schedule VI, Regulation 9, which requires that all facilities, whether formal or informal, whose operations involve the use of electromagnetic fields (EMF) must consider among others, environmental and public sensibilities and sets out tables limiting thresholds of such EMFs for public and occupational exposure. These activities also violate Regulation 37, which requires all organisations involved in the handling of e-waste to ensure that technicians, repairers or scavengers wear appropriate PPE. The burning of e-waste and leaching of precious metals are also expressly prohibited under Regulation 36 (2) of the EES Regulations, but presently these activities continue incessantly in the informal markets. The regulations prescribe stringent penalties for such activities, but the enforcement of these provisions by NESREA's Inspection and Enforcement Department appears to be problematic.

The informal markets provide a veritable platform for the implementation of the EPR principle, as the actors (refurbishers, recyclers, dismantlers and scavengers) constitute part of the e-waste industry in Nigeria. Such group of actors in the EEE chain should operate under a group or association that is representative of their interests in negotiations for improvement of the industry between government and industry. Therefore, the groups of actors are required to be registered with relevant market

[264] Ogungbuyi *et al.,* above (note 1) at 83.

[265] Ibid at 84.

[266] Ibid.

[267] Ibid.

associations, which represent their interests at a political level,[268] and are loosely structured. For instance, there is a Computer and Allied Products Dealers Association of Nigeria (CAPDAN, the umbrella body of the Computer Village traders). Refurbishers of refrigerators and airconditioners are organised in the Nigerian Association of Refrigeration and Air Conditioning Practitioners (NARAP), and refurbishers of other used EEE are organised in the National Electronics Technician Association of Nigeria (NETAN).[269] These associations are registered in Lagos State and some other cities, and pay their taxes to the state accordingly, after remittances are obtained from the group of actors, depending on which association they fall under.

To facilitate the implementation of an EPR/PS programme under the EES Regulations, it sets out the responsibilities of such refurbishers and recyclers under the Guidelines for EPR,[270] one of which is that they must be registered with NESREA for them to operate legally, and must keep appropriate records of used EEE collected or transported by them. NESREA doesn't state the financial implications of such registration and the modalities for registration. The requirements of registration and filling out of forms appear to be cumbersome to the members of these associations, who are mostly uneducated. More so, the drafters of the regulations may not have considered that with more than 3,500 refurbishing/dismantling businesses in each of these markets operating freely, so long as they pay the requisite taxes required by their association, such groups of persons may not be willing to register with NESREA. In fact, these associations are often used to resist pressure from government agencies to conform to established rules in environmental legislation, such as the EES Regulations.[271] Membership of such associations imply that their leaders should negotiate with NESREA to enable them avoid the payment of registration fees, and represent their interests in stakeholder meetings with

[268] Manhart *et al.,* above (note 15) at 25.

[269] Ibid at 25; Ogungbuyi *et al.,* above (note 1) at 68.

[270] Regulation 11 (1), Schedule VIII.

[271] Ogungbuyi *et al.,* above (note 1) at 84.

government, as the requisite pay outs to the associations are meant for maintenance of the markets and workshops where the informal operations are carried out.

The reality is that the requirement of registration under the EES Regulations already places the informal sector under the ambit of mandatory legislation. The EES Regulations, which have expressly set out the responsibilities of the groups of actors, provide sufficient scope for the formalisation of the informal sector. Therefore, while the leadership of these registered associations are necessary, their representative capacity provides scope for them to be regarded as a single PRO that requires registration of such actors under such an umbrella. This is achievable and inherently similar to e-waste registered associations in South Africa such as eWASA and SAEWA (discussed in Chapter 5).

Hence, the informal e-waste sector appears to be well organised and dynamic, and holds the potential for further industrial development and a more advanced recycling industry in Nigeria.[272] It also has another indirect economic role, in that it supplies low-income and middle-income households with affordable ICT equipment and other EEE.[273] The E-Waste Africa Report holds that all policy measures that seek to improve e-waste management in Nigeria should 'refrain from undifferentiated banning of second-hand imports and refurbishing activities and strive for a cooperative approach by including the market and sector associations.'[274] Such a cooperative approach is already envisaged under the EES Regulations. This cooperative approach also requires such markets to work closely with government, which is why the voluntary-to-mandatory model identified in South Africa constitutes the requisite paradigm for application in Nigeria.

What is clear about these informal e-waste markets in Nigeria is that voluntary models do not necessarily need to be formalised before they can operate effectively in e-

[272] Manhart *et al.,* above (note 15) at 79.

[273] Ogungbuyi *et al.,* above (note 1) at 86.

[274] Ibid.

waste management. However, the existence of such informal markets provide a veritable foundation for a voluntary-to-mandatory approach. As stated in Chapter 4, the application of the EPR principle via the voluntary-to-mandatory approach is one developed by the e-waste industry, in conjunction with government. Such relationship and the requisite responsibilities, inclusive of recycling and collection targets to be borne by both industry and government, are subsequently formalised by mandatory regulations. The application of the EPR principle via a voluntary-to-mandatory approach can be actualised though industry associations and their members through an EPR/PS programme prepared in conjunction with the government. Since such groups of actors in the EEE chain may not be financially equipped to establish recycling plants, the most practicable solution is to ensure that such persons are registered under the mandatory legislation described above. While it may be unrealistic to expect that such informal markets be scrapped by government, the existence of registered associations provide a platform for representation of the interests of such group of persons involved in recycling operations. Such a PRO is necessary and will facilitate awareness of the EPR/PS principle and the EPR matrix. It will set out the requisite financial/economic responsibilities of such recyclers, refurbishers, and dealers in that they may be required to contribute to the financial system in place for EEE collection and the establishment of an EEE collection centre; will share in the informative responsibility required of an importer incentive for purchasers of refurbished EEE; and will create awareness of toxic substances contained in e-waste and how protective measures can be implemented in the refurbishment of same. Notwithstanding this, despite the possibility of such registered associations to be consolidated under one PRO, it is important that a single PRO for e-waste be adopted. A single plan provides for clarity of responsibility/duties expected of industry, as was seen in the REDISA scenario in Chapter 4.

Currently, the Lagos State government has earmarked N500m (approximately R30,864,198m)[275] to relocate the largest e-waste market (Computer Village, Ikeja) to a

[275] As stated above, this approximation is based on the current exchange rate of the naira to the rands as at June 2015 (i.e. R1 = ₦16.2).

larger area called Katangowa market in the Agbado Oke-Odo area of Lagos.[276] This plan to relocate the market was reached after meetings between the Lagos State government, its Ministry of Planning and Urban Development, the construction company and CAPDAN.[277] CAPDAN expressed reservations about the relocation, arguing that while the relocation is necessary to create more room for refurbishers, recyclers, dismantlers and dealers in the e-waste market to carry out their operations, the relocation may also end up creating division among the traders, if there is no sincerity of purpose from the government.[278] It remains to be seen if the Planning Permits under the Lagos State Law, read with the regulations on e-waste, will enforce the groups of actors' compliance with such laws, or will result in a total scrapping of the informal e-waste markets, under the guise of this relocation.

It should also be noted that there is a semblance of a 'formal e-waste sector' in Nigeria, which is propagated and implemented by the government of Lagos State through the Lagos State Waste Management Authority (LAWMA)[279] and Lagos State Environmental Protection Agency (LASEPA). LAWMA has a public-private partnership arrangement for the overall collection of municipal and industrial waste and collect waste from households and commercial/industrial facilities across the state by a door-to-door collection with organised pickup days. It also collects waste dumped in large bins in selected communities where door-to-door pickup is operationally impracticable.[280] LAWMA's operations are seemingly efficient and such waste collected, including e-waste, is delivered to three official dumpsites in Lagos: the Olusosun site in Oregun,

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[276] PM News 'Lagos Earmarks N500m to Relocate Computer Village,' 20 January 2014, available at *http://www.pmnewsnigeria.com/2014/01/20/lagos-earmarks-n500m-to-relocate-computer-village/,* accessed on 11 June 2015.

[277] Emma Okonji 'Lagos to Relocate over 3,000 Computer Village Traders' 06 October 2014, available at *http://www.thisdaylive.com/articles/lagos-to-relocate-over-3-000-computer-village-traders/190619/,* accessed on 11 June 2015.

[278] Ibid.

[279] The Lagos State House of Assembly enacted a Law to Establish the Lagos State Waste Management Authority and for Connected Matter in 2007. Section 1 (1) of this Law establishes LAWMA.

[280] Ogungbuyi *et al.,* above (note 1) at 67.

Lagos, the Oke-Odo site in Abule-Egba, Lagos State and the Esolo site in Isolo, Lagos.[281] Currently, the e-waste collected is kept apart in a section of the dumpsites managed by LAWMA.[282]

LASEPA, through a consultant maintenance system consultancy (MSC) visits companies and government agencies to evacuate WEEE. This WEEE is kept in a warehouse in anticipation of a recycling activity.[283] The E-Waste Assessment Report notes that no money is currently being charged for the evacuation by the consultant, thus creating an incentive for the corporate organisations to declare their e-waste stockpiles and get them ready for evacuation.[284] Olusegun reports that the Lagos State government has created a dumpsite for the management of e-waste in Tamalo Village, Lagos. However, the dumping of such waste, including e-waste, in open dumpsites do not constitute sustainable practices and do not implement the EPR principle, a pollution prevention policy meant to decrease the environmental impacts on health and the environment. Owing to reports by passers-by regarding the foul fumes emanating from such dumpsites, which affect the health of citizens in Lagos State who live near to the dumpsites, the Lagos State government stated its commitment to convert the Olusosun dumpsite in Ojota to a golf-course.[285] The Lagos State government plans to develop modern disposal sites and to establish a recycling centre in collaboration with the MSC e-waste project. This joint project is a private-public partnership program, joining efforts

[281] Manhart *et al.,* above (note 15) at XII; *The Digital Dump,* above (note 3) at 22. These dumpsites are so designated in accordance with s 16 (1) of the LAWMA Law. These dumpsites are reported to age between 12 and 25 years with a combined capacity of 63.67 ha. The State Government recently approved the construction of a new landfill site at Epe (South East Lagos) and two other sites being proposed at Ikorodu (North East Lagos) and Badagry (South West). The Report also notes that LAWMA intends to commence the construction of 20 Transfer Loading Stations throughout the State between 2008 and 2015 and the construction of an additional three Integrated Waste Management Facilities (IWMF) in Lagos States, to attain 35% compliance in zero waste between 2012 and 2016. See Ogungbuyi *et al.,* ibid at 75.

[282] Ogungbuyi *et al.,* above (note 1) at 67.

[283] Ibid at 67, 76.

[284] Ibid.

[285] 'Olusosun Dumpsite to become a golf course.' 29 December 2014, available at *http://www.thecable.ng/olusosun-landfill-become-golf-course*, accessed on 10 June 2015.

and resources to separate e-wastes from the general waste stream and managing the potentially hazardous wastes into controlled disposal and recycling.[286]

Nevertheless, these laudable activities of the provincial government of Lagos State appear to be in competition with the informal e-waste sector in Lagos State. The 2011 UNEP SBC E-Waste Africa Report rightly notes that any strategy addressing e-waste management in Nigeria should carefully consider the various potentials of the informal collection and recycling system before establishing a parallel system in competition to these structures.[287] It also notes that clear terms of interaction between the informal players and LAWMA and LASEPA are likely to increase the overall efficiency of the collection and recycling system and can act as key instrument to sustainably steer e-waste flows into the desired management channels.[288] For this cooperative scenario to effectively play out, the Lagos State government must consider the construction of the EEE hatch in the manner utilised by Company A (see Chapter 4). Unusable, dismantled e-waste can be placed in such hatches by the actors operating in the informal markets, rather than being crudely burnt or dumped in open heaps. LAWMA and LASEPA can empty the hatches on two specified days in a week and can transport same to the proposed recycling/collection centre established by the Lagos State government. It remains to be seen whether there will be scope for proper implementation of this scenario in the future.

5.7 Analysing the current application of a sustainable EPR approach in Nigeria

The central theme of this thesis is the need for sustainable management of e-waste via the EPR principle, as manifested through the EPR matrix – the imposition of responsibilities on an importer in a developing country context. It has been established that the

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[286] Odeyingbo Olusegun Ayodeji *Assessment of the flow and driving forces of used electrical and electronic equipment into and within Nigeria* (2011) Master's Thesis, Brandenburgische Technische Universitat, at 27, available at *http://isp.unu.edu/publications/scycle/files/master-thesis-olusegun.pdf, accessed on 22 November 2014.*

[287] Manhart *et al.,* above (note 15) at 79.

[288] Ibid at 79.

combination of the Harmful Waste Act 1988, Sanitation and Waste Regulations 2009 and the EES Regulations 2011 present a concerted effort by the government to utilise the EPR approach for successful management of EEE trade in Nigeria. However, the practical implementation of such legislation appears to be problematic. It also appears that the drafters of the legislation, particularly the EES Regulations, were in a hurry to adopt an EPR-oriented legislation without considering the consequences of some of its provisions (as seen above). Currently, e-waste appears to be mandatorily regulated in Nigeria, with little or no input from the voluntary-informal sector constituted by the e-waste markets. Nevertheless, the positioning of registered associations in the markets provide a foundation for such governmental-industry collaboration if the associations are registered with NESREA as the single e-waste industry-led PRO.

Concerning awareness of new and used EEE recycling and the prohibition of WEEE, the government has not been proactive in promoting awareness via TV jingles and adverts about same or how the EPR approach to e-waste works by placing responsibility on producers and importers. There is as yet no published document regarding best management practices for the ESM of electronic waste to be used by importers, recyclers, dismantlers and refurbishers. As a result, the layperson is unaware that the piecing together of various parts of used EEE without the use of protective equipment in Ikeja Computer Village can be harmful to the refurbishers' health. Most members of the public are also not aware that there is a law regulating the activities of such refurbishers or the importation of such used EEE into the country.

As stated above, although NESREA is empowered to enforce the requisite environmental legislation on e-waste, the NCS regulates the inflow of WEEE from developed countries and collects the requisite tariffs on legally imported ones.[289] Synergy between the two agencies is instrumental in controlling the illegal importation of WEEE. However, although the NCS collects revenue for the Federal government and cooperates with NESREA in the interception of illegal e-waste-laden vessels, the NCS is limited to

[289] Adeniran and Abdulkarim, above (note 20) at 646.

complying with government fiscal policies by collection of tariffs and taxes, while used EEE is not considered as contraband as long as duties and taxes are collected on them.[290]

Accordingly, the implementation of the sustainable EPR approach to e-waste management, though kick-started by the EES regulations is fraught with challenges. NESREA stated in 2011 that it is 'presently negotiating for a reputable recycler to establish a recycling plant to take care of WEEE, including those generated locally.'[291] By 2013, it stated that it was still in discussions 'with the Original Equipment Manufacturers (OEM like Dell, HP, Phillips, etc.) and a UK based recycler on the execution of the provision of the Regulations on EPR. This recycler has submitted a feasibility study to establish a facility which is currently being considered.'[292] While this appears to be a step in the right direction, it is worrisome to contemplate the burden on only one recycler to manage all the e-waste generated in the country. This appears unrealistic, and NESREA is empowered under the NESREA Act to advise the Minister of Environment on the feasibility or otherwise of having only one recycler in the country, compared to what is the case in the countries of its counterparts, like South Africa, which has about six main recyclers, and other smaller recycling companies that work closely with the main recyclers.

5.8 NESREA's proposed EPR Guidelines on EEE

In a bid to correct the perceived flaws in the EES Regulations, NESREA has adopted Draft Guidelines for Implementation of EPR for the Electrical and Electronic Sector in 2013.[293] The Draft expands the definition of a *producer* to encompass the true state of affairs in

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[290] Nigeria Customs Service, (2011) *Challenges Facing Effective Management and Regulation of E-waste*. A paper presented by Nigeria Customs Service at a two-day summit of Regulation and Management of E-waste in Nigeria (Eko E-waste Summit), February 2011, cited in Adeniran and Abdulkarim, above (note 20) at 646.

[291] Ngeri S Benebo, 'E-Waste Africa Project: Nigeria's Experience' Side-Event Presentation at Basel COP 10, Cartagena Colombia, 20 October 2011 at 14, available at *http://www.basel.int/Portals/4/.../e-Waste.../6_Nigeria_LessonsLearned.pdf,* accessed on 21 November 2014.

[292] Amachree, above (note 110) at 23.

[293]Ibid at 24.

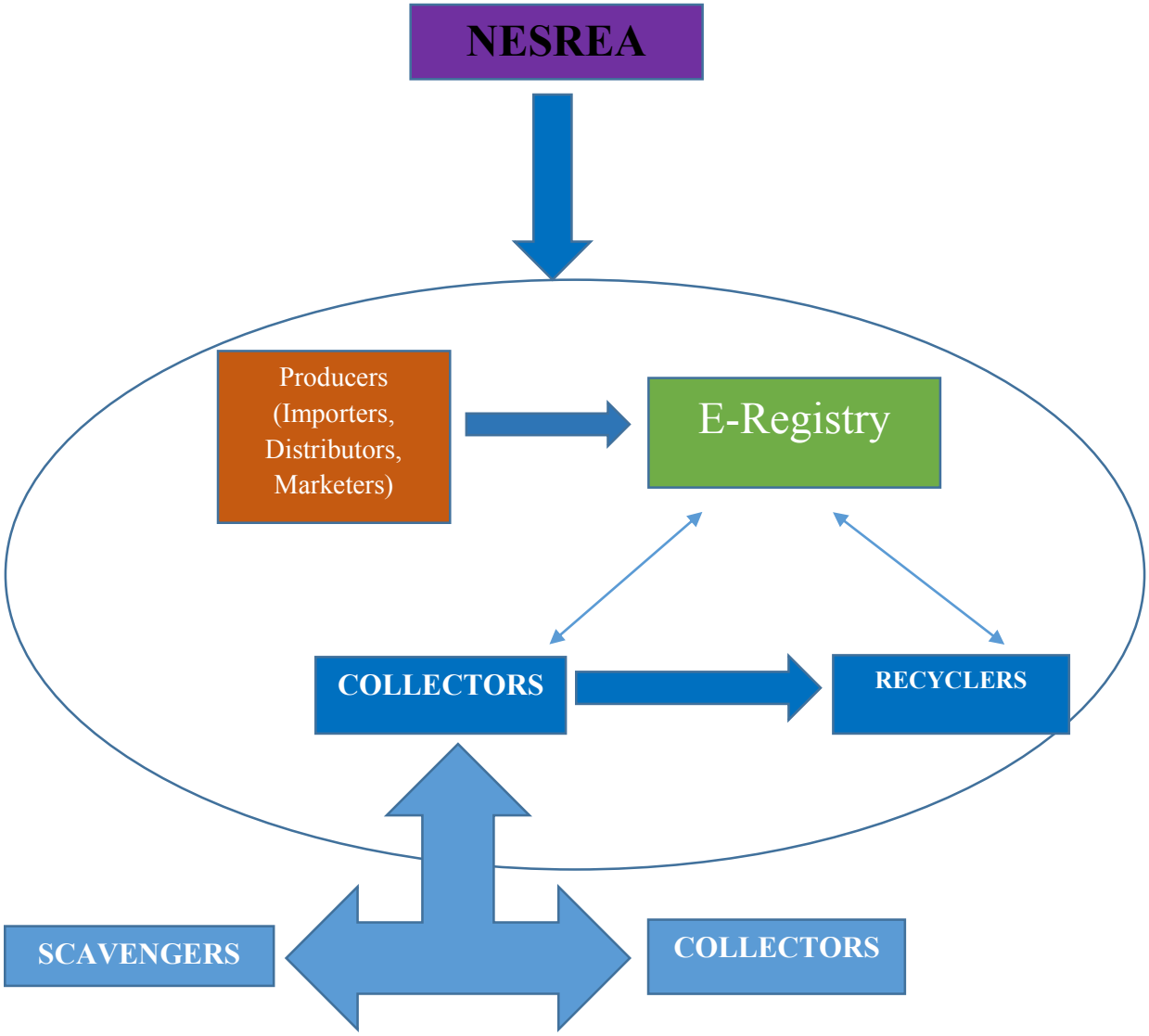
Nigeria and includes an importer, manufacturer, producer and assembler who sells and resells EEE produced by other manufacturers, produced by other suppliers under his or her own brand, or who imports or exports EEE as a business.[294] The Draft Guideline incorporates the establishment of collection centres in collaboration with the OEMs. It also provides for an EEE Registry, i.e. a registered body/organisation that maintains the register of producers/recyclers/waste organisations and inventory of WEEE/E-waste nationwide, which will be operated by third-parties and public-private partnerships.[295] The Framework and functions of the Registry for importation of used EEE into Nigeria is also provided in the Draft, and sets out criteria for registration and participation of producers.[296] The proposed registration system is designed in the diagram below:

[294] Ibid.

[295] Ibid.

[296] Ibid.

Figure 1: NESREA's proposed EEE Registration System[297]



The Draft Guidelines seek to provide a solid foundation for the implementation of the EPR principle to e-waste management in Nigeria and to bring it almost on par with the modalities required of a mandated EPR/e-waste model under the South African model.

[297] Amachree, above (note 110) at 26.

However, two key elements distinguish the South African model from that of Nigeria. The first is the constant interface between government and industry, aimed at ensuring satisfaction for all stakeholders in the e-waste industry, while promoting environmental, social and economic sustainability. The settings under which such collaboration with government are achieved were set out via an identification of the three types of voluntary approaches in this thesis. Second, the presence of e-waste industry PROs such as eWASA and SAEWA – i.e. an informal-voluntary approach working towards the interests of recyclers and other stakeholders – is what makes the e-waste industry in SA efficient and sustainable. The attendant publications by these PROs, i.e. Code of Conduct, Constitution, various ISO documents on efficient environmental management systems, and Information Guide for setting up e-waste businesses, which were drafted using Basel Conventions Guideline Documents, provide clarity concerning implications of being an e-waste recycler. Thus, although the proposed EEE and negotiations regarding a single private recycler are commendable, the reality is that there are sufficient regulations for enforcement of e-waste regulation in Nigeria, but certain aspects of the legislation need to be amended. There is room for formalisation of the informal sector while also achieving sustainable application of the EPR principle. There is also an urgent need for a financial scheme for the establishment and operation of collection centres in Nigeria. These constitute part of the recommendations for Nigeria in the next chapter, against the backdrop of the South African model discussed in the previous chapter.

Conclusion

The above underlines Nigeria's attempt to apply sustainable practices to the management of e-waste and new and used EEE through the application of EPR. From the foregoing, it appears that Nigeria's government has adopted a mandatory approach to e-waste management through its legislation. The adoption of the Harmful Waste Act, the Sanitation and Waste Regulations and the EES Regulations appear to be indicative of Sinha-Khetriwal et al.'s ideal that in the development of an e-waste recycling system in a country, 'a flexible and *adaptive* system for sustainable management of e-waste that can handle the variability in quantity and quality of e-waste flow'[298] must be considered.

[298] Khetriwal *et al.,* above (note 18) at 503; Aborele, above (note 18) at 6.

However, while the development of such a system has been actualised via these laws, the adaptability of such legislation, i.e. the implementation of EPR in that jurisdiction, still requires clearer direction. While these laws are noteworthy, the EES Regulations rely on Guidelines to increase their legal effect and as such, this legislation does not appear to be adaptive to the Nigerian situation. The Sanitation and Waste Regulations 2009 and the EES Regulations 2011 both set out clear responsibilities for importers, retailers/distributors, recyclers, refurbishers, dismantlers and consumers, which is indicative of the PS approach, an extension of the EPR principle. Hence, while the Regulations provide scope for future implementation of the EPR/PS approach to e-waste management, what seems missing concerning mandatory legislation is the adoption or submission of a PS Plan or an EPR Plan for e-waste by importers. The purpose of such a plan is to incorporate the extent to which the stakeholders in the EEE chain in Nigeria may bear the requisite legal liability, physical/environmental responsibility, financial/economic responsibility and informative responsibility per the EPR matrix. The delineation of a financial/economic system is central to the implementation of a successful EPR/PS approach to e-waste management and is the main driver behind the establishment of a collection centre for further e-waste recycling in Nigeria. Therefore, the adoption of such collection centres for e-waste recycling and processing is urgently needed, and is best implemented with one or more equivalent e-waste recycling plants in Nigeria. Currently, there is no single e-waste recycling plant in Nigeria, since the logistics intrinsic to the establishment of such are not favourable. Nevertheless, it is envisaged that, in the near future, government can create incentives for foreign investors to consider the establishment of e-waste recycling plants in Nigeria, or to provide financial incentives to assist private persons in the establishment of such.

The efforts of recyclers, collectors, dismantlers, refurbishers and scavengers in the e-waste markets constitute the informal e-waste sector in Nigeria, and is reflective of an informal-voluntary approach to e-waste management. The informal sector provides a veritable platform for a voluntary-to-mandatory framework for the continuous importation

of used EEE, and a centre for various used EEE refurbishing and dismantling businesses. While the operations of such groups of persons may not be sustainability-oriented or may not adopt the EPR principle, the informal sector presents the potential of being formalised. The existence of registered industry associations provide scope for its adoption as a PRO, registered under law, but representative of interests of stakeholders in the e-waste industry, i.e. informal markets. This voluntary-to-mandatory approach, which was identified in Chapters 2 and 4, constitutes a means through which the informal-voluntary sector continues to contribute to the economy, but its activities are monitored and regulated by government under mandatory legislation to this effect.

In view of this, this chapter established the necessity of a working synergy between government and the informal sector, i.e. a mix of the mandatory approach and the informal-voluntary approach, with a view to proposing that the informal sector be incorporated in mandatory regulations as one with the potential to transit to a voluntary-to-mandatory initiative on e-waste in Nigeria. In achieving this objective, government may convene various and continuous stakeholder forums in order to ensure the effective implementation of the EPR/PS principle in Nigeria.

In the next chapter, recommendations are provided for Nigeria based on the EPR/PS approach, the EPR matrix and the collective analysis of same presented in the previous five chapters.

CHAPTER 6

FINDINGS OF THE RESEARCH, RECOMMENDATIONS FOR NIGERIA AND CONCLUSION

This thesis set out to investigate the realistic implementation of the EPR principle in achieving effective management of e-waste. It analysed the implementation of mandatory regulation and voluntary initiatives on e-waste, using the EPR principle and the EPR matrix set out in Chapter 2 as the unit of analysis. It also considered these initiatives and their application in South Africa, in order that Nigeria may draw lessons from that jurisdiction.

6.1 The thesis findings

To provide a concise appraisal based on the hypotheses, this thesis was developed in the form of six chapters. The findings of each chapter are set out below.

The trade in e-waste between developed and developing countries thrives under the guise of the re-use element, i.e. shipments of used EEE to developing countries owing to the thriving e-waste refurbishing markets. The adoption of sustainability-oriented legislation provides a viable means to regulate this trade, particularly when such legislation identifies the key facilitator of the trade and places specific responsibilities on such an actor, in order to ensure less harm to human health and the environment from e-waste.

Having identified that the EPR principle provides one of the most effective tools in achieving this, it was argued that the EPR principle was developed in a developed country context that seeks to place the responsibilities under the EPR matrix on a producer of new EEE. However, it is more realistic to consider existing circumstances in a developing country context, where the importer is the key actor in the EEE chain, and established that the importer and not a producer should bear the responsibilities set out in the EPR matrix. In order that the burden of such responsibilities is not too cumbersome on the importer, the EPR principle must be applied in a manner that such responsibilities are shared by other stakeholders in the EEE chain, i.e. PS. Therefore, the thesis considers the combined EPR/PS approach as a most efficacious model to be applied to e-waste

management in a developing country. The application of such an EPR/PS approach can be achieved via mandatory regulation and identified voluntary industry initiatives.

Furthermore, international treaties on hazardous waste merely regulate the e-waste trade and do not ban it outright, but the adoption of guideline documents in recent years, which incorporate the EPR/PS approach, provide scope for future regulation of e-waste fractions at the international level. Such guideline documents provide sufficient guidance to parties to consider incorporating same into national e-waste legislation to that effect.

Concerning the South African regulatory framework used as the model for Nigeria, the researcher found that its regulatory framework is sufficient for e-waste management, but more success and implementation of the EPR/PS approach is implemented through voluntary initiatives. Besides mandatory regulation on e-waste, three voluntary approach types exist in SA: the voluntary-to-mandatory approach, the formal-voluntary approach and the informal-voluntary approach. However, the informal-voluntary approach is reflective of a PRO, and the adoption of such an approach may be problematic in e-waste management owing to the overlap of similar goals proposed by PROs for e-waste management. The thesis therefore found that South Africa is currently moving towards a voluntary-to-mandatory approach to e-waste management and proposes the same for Nigeria.

Nigeria's existing regulatory framework provides sufficient scope for implementation of the EPR/PS principle, but fails to set out ways in which this can be achieved. The thesis, thus suggests the informal-voluntary approach to e-waste in Nigeria as a viable means for formalising the informal sector in Nigeria.

Collectively, the above findings lend credence to the central theme of this thesis: that a sustainable EPR/PS approach to e-waste management in Nigeria must be reflected clearly in the constitutional, legal and institutional framework, and that the actualisation of this approach requires a shift from merely adopting mandatory legislation to identifying and utilising voluntary initiatives as a supplement to mandatory regulation. This premise is based on the global trend in e-waste management, i.e. utilising environmental policy tools to ensure that a cradle-to-cradle approach rather than a cradle-to-grave approach to e-waste is maintained.

Accordingly, this Chapter sets out a roadmap for Nigeria towards arriving at this voluntary-to-mandatory approach to e-waste management, and recommendations for government and industry towards achieving these goals.

6.2 Recommendations for the future implementation of a sustainable EPR/PS approach to e-waste management in Nigeria

In the previous chapter, a number of gaps in Nigeria's current e-waste regulatory framework were identified that must be addressed through requisite amendments of the mentioned legislation. In view of the fact that there is some semblance of an informal-voluntary approach to e-waste in Nigeria, proposed amendments or additions to the regulatory framework must incorporate a proposed collaboration of industry with government to facilitate a transition from an informal-voluntary e-waste model to a voluntary-to-mandatory e-waste model. In view of this, the thesis makes two main recommendations.

A. TOWARDS AN EFFECTIVE E-WASTE REGULATORY FRAMEWORK IN NIGERIA

1. Amendments to e-waste legislation

First, it is imperative that the EES Regulations 2011 be sufficiently amended to empower Nigeria's Minister of the Environment to declare e-waste to be a priority waste with immediate effect. This would impose the need to specify sufficient EPR measures that must be applied to the management of this waste stream in order to protect human health and the environment from the composition of such EEE. Such a declaration must also be made after requisite consultation with the Minister of Trade and Industry and Finance to determine the effect of such declaration on the national economy concerning prohibition of certain imports. This amendment must consider similar provisions in the South African Waste Act 2008.

Second, such amendments must address the gaps identified in Chapter 5, including the identification of what EPR measures entail and the establishment of requisite institutions to facilitate the EEE permit/licensing systems and a national database for EEE importing and exporting. Where such amendments cannot be made in existing legislation, a strategy document similar to SA's National Waste Management Strategy 2011 should

be adopted and read in conjunction with e-waste regulations in Nigeria. In the absence of this, a memorandum of understanding or legal agreement must be considered between government and industry to mandate compliance and penalties in achieving specific goals relating to e-waste collection and recycling. Such amended legislation or legal agreement provides a viable means by which the informal-voluntary approach to e-waste in Nigeria can be formalised.

Third, to ensure that such e-waste regulations reflect changing global considerations and improvements for sustainable e-waste management, the regulatory framework on e-waste must be amended within specified timeframes to ensure that it is not outdated.

2. Utilisation of the EPR matrix from a product stewardship perspective

In the previous chapters, the EPR matrix was set out as the unit of analysis to determine how effectively such responsibilities can be imposed on an importer in a developing country context in achieving sustainable e-waste management. The following recommendations are made on this basis:

i. Legal liability

The EPR matrix in Chapter 2 sets out the legal liability of an importer, and includes adopting a plan at the manufacturing stage to ensure EEE disposal at its EOL is effectively carried out in environment-friendly ways. Legal action may arise against such an importer if any proven environmental damage occurs while using such new or used EEE. While this legal liability may also include hazardous waste collection and disposal liabilities as well as hazardous waste remediation liabilities, the first aspect of this liability should be enforced on local EEE assembling companies who place assembled EEE in the domestic market for sale in Nigeria. The second aspect of this liability, which requires hazardous waste collection and disposal liabilities, must be set out in proposed EPR/PS programme under the EES Regulations 2011 and the Sanitation and Waste Regulations 2009. The extent of the liability of such local assemblers, importers and informal recyclers or refurbishers must be set out under such a programme in order to ensure clarity of purpose. The requirement for hazardous waste collection and disposal liabilities must also be included in amended EES Regulations to reflect the role of local governments to share in

the responsibility of hazardous waste collection and disposal liability. This should be modelled in consonance to the South African Waste Act, which also requires municipalities to move towards e-waste recycling. Where possible, federal and state governments must also provide the requisite support and incentives to local government areas in Nigeria to facilitate the establishment of e-waste collection facilities therein.

ii. A financial system for e-waste collection and disposal

In the previous chapter, it was established that the development of an economic/financial system is key to the establishment of an effective e-waste recycling regime in any jurisdiction. The EPR principle advocates the use of financial instruments such as ARF, ADFs, deposit refund systems, tax subsidies and import levies, etc. However, in applying an extended EPR/PS approach in Nigeria, a combination of such instruments may be warranted. Accordingly, in view of the fact that the importer is the key actor in the EEE trade in Nigeria, it suggested that a proposed EPR/PS programme under Nigeria's regulatory framework include an import levy to be placed on the importer at the point of import of new and used EEE. Shared responsibility can also be strengthened by imposing ARFs on consumers, in order that importers, consumers and government can share in the responsibility required for establishment of at least one effective e-waste collection/recycling facility in Nigeria. Such a plan must also be prepared in conjunction with government in order that a designated company/entity be appointed to manage the funds realised from such financial instruments and apply same to the establishment of e-waste collection centres in Nigeria. Additionally, the REDISA model on waste tyres in SA should be considered in future negotiations and discussions regarding the appointment of a financial company to manage the funds.

iii. Physical/Environmental responsibility of EPR principle

In view of the fact that new EEE is not manufactured in Nigeria, it is recommended that NESREA be circumspect in ensuring that local EEE assembling companies in Nigeria import only EEE components that are eco-friendly, i.e. contain less hazardous substances, in order to facilitate the recycling of same in Nigeria. In enforcing this responsibility, NESREA must also carry out regular inspection of such assembling companies to determine whether they are conform to the requirements under the EES Regulations for

proper establishment of anti-pollution technologies during the assembly of such EEE components.

iv. Informative responsibility of EPR

This responsibility requires the importer, local assembling companies, retailer/distributor, recycler/refurbisher and government to share in the dissemination of information about new/used EEE and e-waste. It is recommended that importers/retailers ensure that all new EEE sold be accompanied by an instructional manual, and apply same for used EEE. Local assembling companies who couple EEE components into usable products for sale as well as refurbishers of used EEE and components must also ensure that consumers are aware of source separation and substances contained in such products. Government's role should be to use the media to create awareness regarding the use of new and used EEE in Nigeria, the health and environmental consequences of open burning and dumping of e-waste, and awareness about the need to separate e-waste from general waste and submit same to collection centres or recycling plants when established. NESREA is also encouraged to create awareness in the informal markets regarding PPE use in the dismantling and refurbishing of second-hand EEE.

3. Establishment of an EEE registry

NESREA's proposal to establish an EEE registry of producers/recyclers/waste organisations and an inventory of WEEE / e-waste nationwide is still in paper form. It is recommended that this EEE registry be established sooner rather than later. An effective EEE registry is best run with the involvement of ICT experts, who should keep data of all new, used and waste EEE imported and sent to collection centres for recycling. This means that government, in conjunction with NESREA and the NCS need to work with third-parties and public-private partnerships (as proposed in the 2013 Draft Guidelines for Implementation of EPR for the Electrical and Electronic Sector), to ensure that such ICT experts collate data efficiently, and direct that they publish a report every six months. This will also assist both agencies in ensuring that all imported new, used and waste EEE are properly documented to avoid the importation of e-waste into Nigeria.

4. Collaboration by NESREA with South Africa's DEA

It was identified earlier in this thesis that South Africa is the leading country in Africa with the most sustainable environmental policies that are constantly being reviewed and implemented. NESREA is encouraged to liaise with the South Africa's DEA and the two prominent e-waste recyclers mentioned in Chapter 4, to get a sense of how an EPR approach can be implemented in Nigeria. NESREA should also investigate other African countries so as to recommend and ensure the best arrangements for effective e-waste recycling in Nigeria is applied.

B. TOWARDS A VOLUNTARY-TO-MANDATORY APPROACH TO EWASTE IN NIGERIA

The e-waste markets in Lagos provide a dynamic, informal sector that plays a role in the economy by providing jobs for Nigerians. It also provides an avenue for low and middle class people to afford and own refurbished EEE. While the informal e-waste markets should not and cannot be completely eradicated, it is imperative that the relationship between government and the actors in the informal markets be strengthened to facilitate a gradual but effective transition from an unregulated informal-voluntary approach to a voluntary-to-mandatory approach to e-waste. This would see industry plans being developed by the e-waste industry in conjunction with government and then formalised via an e-waste regulatory framework. Presently, the e-waste markets, which are representative of an informal-voluntary approach to e-waste management, can move to a more formalised-voluntary approach, since the recyclers, refurbishers, dismantlers and scavengers already fall under the ambit of the EES Regulations. Therefore, the following recommendations are proffered:

a. Timely submission of an EPR/PS programme or plan

It is recommended that the proposed PSP required under the Sanitation and Waste Regulations 2009 and the EPR Plan required under the EES Regulations 2011 be submitted by importers in conjunction with industry as an EPR/PS plan under one law. Such a plan must be submitted by the market associations identified in Chapter 5 as

potential PROs, after due consultation with importers and other stakeholders. It must also be a single plan, since multiple plans have the potential to create confusion in the industry as to which plan the e-waste industry must comply with.

b. Establishment of e-waste collection centres

It is recommended that such a plan or programme must delineate the responsibilities of industry and government, particularly the financial instrument type(s) to be utilised. It is also imperative that the funds realised be utilised for the establishment of e-waste collection centres in different states in Nigeria, particularly in Lagos, where the e-waste importation thrives. Effective implementation of e-waste legislation in Nigeria can only be achieved if there are various e-waste collection centres for take-back and recycling. Murphy et al. take the view that 'the number of collection points is an important architectural choice, as it determines the level of convenience provided to individuals eligible for using the e-waste system. Research has shown that the more convenient recycling is, the more likely people are to recycle.'[1] This is a very important factor, and should be considered by NESREA. Collection centres should not only be placed in Lagos State, where importation of e-waste and generation of same thrives, but should also be placed in other commercial cities. It is also recommended that government in each state of the Nigerian federation organise e-waste collection days, co-ordinated by NESREA and the Federal Ministry of Environment, in conjunction with industry, to encourage consumers to bring in obsolete e-waste at a designated place (rather than same being crudely burnt or dumped).

c. Stakeholder/Committee meetings between the e-waste industry and government

Transitioning from an informal-voluntary approach to a voluntary-to-mandatory approach to e-waste requires recurrent consultations or meetings between industry, NESREA, the

[1] Susan Fredholm Murphy, Jeremy Gregory, and Randolph Kirchain 'Evaluation the Performance of Recycling Systems – Examples from North American and European Electronics Recycling Systems' in Klaus Hieronymi, Ramzy Khahat and Eric Williams *E-Waste Management – From Waste to Resource* (2013) at 125.

NCS and government to ensure that the proposed ideas for e-waste management proposed by parties are synchronised with the EPR/PS approach to e-waste. Such discussions must also include modalities for setting up a formal e-waste PRO board. Such a board should ideally consist of a representative of each market sector, to promote and represent the interests of the government and the informal sector towards implementing the EPR/PS approach to e-waste in Nigeria.

d. The establishment of e-waste recycling plants by private individuals

Government must provide financial incentives to foreign investors, interested companies and private individuals to establish e-waste recycling facilities in Nigeria. Such interested companies and private individuals constitute the informal e-waste sector, and the establishment of such e-waste recycling facilities brings them under the ambit of mandatory regulations, which requires them to fulfil certain conditions prior to the establishment of such plants. While NESREA is currently considering proposals in this regard, requiring interested parties to re-submit such proposals in conformity with the requirements under the EES Regulations,[2] it is recommended that the government, through NESREA, reject proposals that do not consider or include a proposed generating plant to power such a facility. This particular provision is a key factor in the establishment of recycling facility owing to the erratic power supply in Nigeria. NESREA must also ensure that such a proposal sets out the social, economic and environmental incentives which such a facility will create for the benefit of Nigeria's citizens.

Conclusion

This thesis provides a roadmap for the implementation of a sustainable EPR approach to e-waste management in Nigeria. The Basel Convention imposes obligations on State parties to control the transboundary movement of hazardous waste, leaving it to States to effectively regulate same at the national level. Thus, the adoption and implementation of the EPR/PS principle at the national level is a worthy incentive for effective e-waste management. While the EPR approach to e-waste management is not the only tool that

[2] Abdulssalam Isa 'Update on E-Waste Management in Nigeria' – A Presentation made at the 4th Annual Meeting of the International E-Waste Management Network (IEMN), Hanoi, Vietnam, 14-17 July 2014 at 8, available at *http://www2.epa.gov/sites/production/files/2014-08/documents/nigeria_country_presentation.pdf*, accessed on 13 June 2013.

can be used to handle e-waste management in a developing country such as Nigeria, it presents one of the best options to date, since it encourages the ecological (re)design of EEE products, promotes sustainable take-back and recycling of EEE, and provides social, economic and environmental incentives. Although the EPR principle will not eliminate the practice of incineration and dumping of EEE or the illegal importation of waste EEE into Nigeria, it currently forms part of Nigeria's e-waste legislation, incorporating the notion of shared responsibility of all actors in the EEE chain (PS), with hopes of further and effective implementation based on the recommendations proposed above.

Although a strict application of the EPR principle seeks to place several responsibilities on a producer of EEE, i.e. the EPR matrix, this research concludes by re-iterating that the EPR/PS approach can be implemented successfully in Nigeria only if the e-waste importer is identified and propelled as the key actor in the EEE chain, rather than the producer of EEE. The importer of new or used EEE is the party who should bear and contribute to any financial, legal or other responsibility geared towards the establishment of EEE collection centres and recycling facilities in Nigeria. To ensure proper implementation of such responsibilities, consumers of EEE in Nigeria must also share the financial cost of recycling unusable EEE that was originally purchased from an importer. However, this option is only achievable with the existence of a producer responsibility board, the existence of registered recyclers operating EEE recycling plants, and the establishment of collection centres for EEE.

In reality, there is no single universal approach to e-waste management for developing countries in the face of the many creative solutions that currently exist, and the EPR/PS approach adopted in this thesis presents a synchronisation of sustainable solutions that must be applied in a developing Nigeria. Hence, Nigeria must continue to draw lessons from South Africa's proactive e-waste legislation and enforcement policy, and where necessary, rom other jurisdictions that have successfully implemented the EPR principle to e-waste management.

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